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# BULLETIN

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*Fall 2022*



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**Iranian  
American  
Medical  
Association**

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# IAMA Bulletin

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# A Note from the Editor

Dear friends and colleagues,

It has been a long time since I have written this editorial. During this period we have gone through the Covid-19 pandemic, economic turbulence, and a war that has indirectly affected us all. With the help of all concerned Covid is departing us. Meanwhile IAMA is growing fast. Scientific meetings are better than ever. IAMA is well recognized in Iran and the healthcare community appreciates its existence. The side benefits of

our organization are personal friendships which have the spirit of brotherhood.

We have to do our best to have the younger generations active and involved. They will inherit IAMA and should be in position to run it the same way and even better than it is now.

My best wishes to all,

**Parviz Pishvazadeh, MD**  
**Editor-in-Chief**

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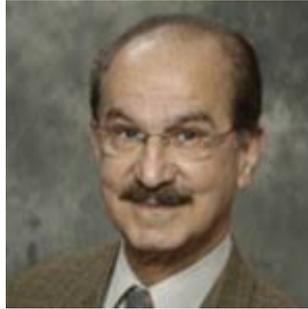
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**IAMA**  
**PO Box 8218**  
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## **Be in IAMA with IAMA** **Amir Ganchi, MD**

Dear Members, Friends, and Fans of IAMA,

It has been a few years that we have not had usual communication with you due to the Covid-19 pandemic. Fortunately, it was a great opportunity this year so that we could have our annual meeting and start our customary and routine program including our Annual Meeting and publishing this on-line issue of the Bulletin. On the other hand, the activity of IAMA in the other areas continue more to compensate the less activities during Covid-19 times.



Thanks to you, the members and fans of IAMA, who continues to support your organization IAMA is going forward. The members of the Board of Directors and Trustees have increased their efforts on seeing your enthusiasm and interest in IAMA.

At the same time, Chapters, Sections also sincerely participated in these efforts too. For example, awareness seminars in NY, NJ, IL and CA chapters which received with great enthusiasm. On the other hand, monthly on-line medical lectures were started on September 24 and will continue on the basis of monthly online seminars. The topics this month were the Role of Pancreas Transplant in Management of Diabetes Mellitus by Dr. H. Shokouh-Amiri, Professor of Transplants. We in IAMA hope these educational activities continue to help the public and members of the medical community. On the other hand, next year will be the 30<sup>th</sup> Anniversary of IAMA with pride and dignity. As you know 30 years ago, the

Iranian American Medical Association (IAMA) by the efforts of Iranian American Medical dignitaries in the State of NJ was established. The goals were unity of members to help each other, young generations and help ordinary Iranian people. For example, during the past 30 years of existence of IAMA, it helped many young medical doctors to get residencies. The public awareness seminars helped ordinary Iranians to get help and consultations regarding their medical problems or referring to our specialists and colleagues to be treated free of charge. IAMA

did its best to help our fellow Iranians in Iran by establishing IAMA Medical Center in Bam to give free medical services and research after devastating earthquake in Bam. Also recently during the pandemic Covid-19 which took the lives of many people in our beloved country. IAMA did fundraising for that and sent millions of million dollars of equipment and oxygen generators which saved many lives there. At the end being together makes all of us stronger and having more powerful organization to help better.

In meantime chapters continue to hold public awareness meetings in CA, NY and NJ, which receive great enthusiasm in the medical community of those areas. On the other hand, monthly medical lectures started again this month. This month's lecture by Dr Zahra Shafaei on Robotic Surgery vs Laparotomy was recently held. Hope these educational activities continue to help everyone in the field of medicine.

Let us remind everyone in the field of medicine that being in IAMA makes us stronger and helps us to achieve our goals further and better.

# Non Iranian Rulers of Iran

## Shahrokh Ahkami, MD

Before starting my speech, I must pay tribute to the founder of the Iranian-American Medical Association, Dr. Amir Ganchi. Dr. Amir Ganchi founded IAMA (Iranian- American Medical Association), an organization that brought first, second and third generation Iranian-American physicians together. For his success in creating this organization, we thank him and admire his sacrifices.

Iran was commonly known until Mid-20<sup>th</sup> century (1935) as Persia in the Western world, is linked with the history of a larger region, known as greater Iran, from Anatolia in the west to the borders of India and the Syr Darya in the East, and from the Caucasus and the Eurasian steppe in the North to the Persian Gulf and the Gulf of Oman in the South the Iranian Empire begins of the world's coldest continuous major civilizations, with historical and urban settlements dating back to 7000BC (1) this period Ends with Mannueans C13 Dynasties. (Geory Wilhelm Friedrich Hegel (2) calls the Persians the First Historical people.

2- Iran Age, following the influx of Iranian people. Iranian people gave rise to 17 Empires, Most important ones. Medes, the Achaemenid, Parthian Seleucid and Sassanian Empires of Classical Antiquity.

3- The Middle Age: The Muslim conquest of Persia from Rashidun Caliphs to Akkoyunlu the most important: Abbasid Period and autonomous Irania Dynasties. Islamic Golden Age, Shu'ubiyya movement and Persianization process Persianate states and Dynasties (977-1219) Samanids, Safavid



dynasty, Seljuk Empire Khwarazmian Empire, Mongol Empire, Ilkhanate, Timurians (Timurid Empire).

4- Early modern period Safavid Empire (1501-1925) Nader Shah and his Successors (Afshariya Dynasty) Zandiye dynasty.

- Late Modern Period: Qajar Dynasty 1796-1925 Pahlavi Era (1925-1979).

- Contemporary Period: Revolution & the Islamic Republic (1979-2022) Present.

- Alexander, who quickly conquered the Persian Empire under its Last Achaemenid dynast, Darius III, died young in 323 BC leaving and Expansive Empire of partly Hellenized culture without an adult heir. The vast territories were divided among Alexander's generals, Sartaps the Seleucid Empire: Was founded by the Macedonian general seleucus 1 Nicator following the division of the Macedonian Empire. Originally founded by Alexander (11-12-13-14) they ruled Iran 248 years, for 60 years they were absolute rulers, then a Parthian tribal chief overtly take the title of Kings of Persia, before becoming vassals to the Newly formed Parthian Empire in steven C. Hause & William S. Malt by (2004), Thomson wads worth: the Seleucids respected the cultural and religious sensibilities of their subjects but preferred to Ealy on Greek or Macedonian Soldiers and administrators for day-to-day business of governing. The latter part of the reign of Antiochus IV Epiphanes, he saw a further disintegration of the Empire despite his best Efforts ... the Parthians moved into the power vacuum to take over the cold Persian Lands. Efforts to deal with both the Parthians and the Jews as well as retain control of the provinces at the same time proved beyond the weakened Empire's Power. Antiochus died during a

military Expedition against the Parthians in 164 BC.

- the Abbasid caliphate, was the third caliphate to succeed the Islamic Prophet Muhammad. the Abbasid Caliphate first centered its government in Kufa, modern day Iraq, but in 762 the Caliph Al-Mansur founded the City of Baghdad. Baghdad became the center of science, culture and invention in what became known as the Golden age of Islam. This is addition to housing several key academic institutions, including the House of wisdom, as well as multiethnic and Multi-religious Environment, garnered it a worldwide reputation as a “center of learning”. The Abbasid Period was marked by dependence on Persian bureaucrats (such as the Barmakid family) for governing the territories as well as an increasing inclusion of non-Arab Muslims in umman (Muslim Community) Persian Customs were broadly adopted by the ruling Elite, they began Patronage of Artists a Scholars (7) Despite this initial Cooperation, the Abbasids of the Late 8<sup>th</sup> Century had Alienated both non-Arab mawali (clients) (8) and Persian autocrats (9). They were forced to cede authority over all Andalus (Current Spain & Portugal) to the Umayyads in 756, Morocco to the Idrisids in 788, I friqiya and Sicily to the Aghlabids in 800, Khorasan and Transoxiana to the Samanids and Persia to the Safavids in the 8705 and Egypt to the Isma’ili-Shia Caliphate of the Fatimids in 969.

The political power of the caliphs was limited with rise of the Iranian Buyids and the Seljuq Turks, who captured Baghdad in 945 and 1055, respectively, the dynasty retained control of its Mesopotamian domain during the rule of caliph Al-Muqtafi and Extended into (10) Iran during the reign of caliph Al-Nasir the Abbasid age of cultural revival and fruition ended in 1258 with the sack of Baghdad by the Mongols

under Hulagu Khan (I Ikhanate) and the Execution of Al-Mustu’sim.

- Ghaznavid dynasty was a culturally Persianate, Sunni Muslim dynasty of Turkic mamluk origin ruling, at its greatest Extent. Large parts of Persia, Khorasan, much of Transoxiana and the northwest Indian continent from 977 to 1186. The dynasty was founded by Sabuktigin in Ghazna after the Death of his father-in-law Alptigin, who was an Ex-General of the Ssamaniid empire from the Balkh in the Greater Khorasan.

Sabuktigin’s son, Mahmud of Ghazni Expanded the Ghaznavid empire, During Mahmud’s reign (997-1030) the Ghaznavids settled 4000 Turkmen families near Favana in Khorasan. Finally, the Turkmen were defeated and scattered to neighboring lands. in 1033, Ghaznavid Governor Executed (22) fifty Turkmen chiefs for raids into Khorasan Mahmud of Ghazni led incursions deep into India as far as Mathura, Kannauj and Sommath ... in 1018 he laid waste to the city of Mathura ... the wealth brought back from Mahmud’s Indian Expeditions to Ghazni was enormous and contemporary historians (e.g., Abolfazl Beyhaghi) & Ferdowsi give glowing descriptions of the magnificence of the capital and the conqueror’s munificent support of Literature. Mahmud died in April 1030. Although the dynasty was of central Asian turkie origin it was thoroughly Persianized in terms of language, culture, literature and habits [d][49] e [50] and has been regarded as a “Persian Dynasty”.

The Ghaznavid sultans were Ethnically Turkish, but the sources all in Arabic or Persian. The Essential basis of the Ghaznavids military support always remained their Turkish soldiers. There are indications of some Turkish literary culture under the Early Ghaznavids. (Kopruluzade, PP3657) the political power and

administrative Apparatus which gave it shape came very speedily to be within the Perso-Islamic the fact that Personnel of the bureaucracy which directed the day to day running of the state, and which raised the revenue to support the Sultan's Life Style and to finance the professional army were Persians who carried on the administrative traditions of the Samanids, only strengthened this conception of secular power.

Persianization of the state apparatus was accompanied by the Persianization of high culture at the Ghaznavid court, Poets such as Abu'l-Faraj Rumi Sana'i, Otman Mokhtari, Mus'ud-e-Sa'd (52)-e Salman, and Sayyed Hasan Ghaznavi the translator in to Persian Prose Ebn Moqaffa's Kalil wa Demna, namely Abu'l-Maali Nasr-Allah b. Mohammad Persian Literary culture enjoyed a renaissance under the Ghaznavids during the 11<sup>th</sup> century (54) (55) (56). The Ghaznavid Court was so renowned for its support of Persian Literature that the Poet Farrukhi traveled from his home province to work for them (57), the Poet unkur's short collection of Poetry was dedicated to Sultan Mahmud & his brothers Nasr and Yagub (58), Manuchehri wrote numerous Poems a licout the merits of drinking wine (59) Sultan Mahmud, Modelling the Samanid Bukhara as a cultural center, Made Ghazni into the center of learning, inviting Ferdowsi and al-Biruni, he Even attempted to Persuade Avicenna, but was refused. The Ghaznavids continued to develop historical writing in Persian that had been initiated by their predecessors, the Samanid Empire (64), the historian Abu'l-Fadl Bayhaqi's Tarikh-e-Bayhaqi (65) written in the latter half of the 11<sup>th</sup> century Ghaznavids were Turkic and their military leaders were generally of the same stock (66), in terms of cultural championship and support of Persian Poets, they were more Persian than their Ethnically-Iranian rivals, the

Buyid dynasty, whose support of Arabia letters (68) in preference to Persian is well known.

- The seljuqs, who like the Ghaznavids were Persianate in nature and of Turkic origin, slowly conquered Iran over the course of the 11<sup>th</sup> century (67). The dynasty had its origins in the Turcoman tribal confederations of central Asia and marked the beginning of Turkic power in the Middle East. They Established a Sumi Muslim rule over parts of central Asia and the Middle East from the 11<sup>th</sup> to 14<sup>th</sup> centuries. They set up Great seljuq Empire that stretched from Anatolia in the west to western Afghanistan in the East & Western Borders of (Modern-Day) China in the North East today they are regarded as a cultural ancestor of the Western Turks, the present-day inhabitants of turkey and Turkmenistan and they are remembered as a great Patrons of Persian culture, art, literature and language (84) (85) (86). During Malik Shah (107-1092) Iran Enjoyed a cultural and scientific renaissance, largely attributed to his brilliant Iranian vizier, Nizam almulk these leaders established the observatory where Oman Khayyam did much of his experimentation for a new calendar and they built religious schools in all major towns. They brought Abu hamid Gazali one of the greatest Islamic theologians. Nezami Anvari, Khaqani, Sohravardi, Fakhr Razi Naser Khosrow, Bayhaqi, & may Architects & Artists were working for them.

Mongol Conquest rule (1219-1370)

- Mongol invasion (1219-1221) the Khwarazmian dynasty only lasted for a few decades until the arrival of the Mongols. Genghis Khan had unified the Mongols, under him the Mongol empire quickly expanded in several directions in 1218, it bordered Khwarezm. The Mongol invasion of Iran began in 1219, after two Diplomatic missions to Khwarezm sent by Genghis Khan had been

massacred. During 1220-21 Bukhara, Samarkand, Herat, Tus and Nishapur were razed and the whole populations were slaughtered. While Genghis Khan was conquering Transoxiana and Persian several Chinese who were familiar with gunpowder were serving in Genghis's army (91) "whole regiments" entirely made out of Chinese were used by the Mongols to command bomb harling trebuchets during the invasion of IRAN (92). Historians have suggested that the Mongol invasion had brought Chinese Gunpowder weapons to Central Asia.

Before his death in 1227, Genghis had reached Western Azerbaijan, Pillaging and burning many cities along the way after entering into IRAN from its North East. The Mongol invasion was by and large disastrous to the Iranians. The Mongol invaders eventually converted to Islam and accepted the culture of Iran, the Mongol destruction in IRAN and other regions the Islamic heartland (particularly the historical Khorasan region, mainly in central Asia) Marked a major change of Direction for the region. Much of the Six centuries of Islamic Scholarship culture (Persian during Islamic Period) and infrastructure was destroyed as the invaders leveled cities, burned libraries and in some cases replaced mosques with Buddhist temples (95) (96) (97).

The Mongols Killed many Iranian Civilians. Destruction of qanat irrigation systems in the North East of IRAN destroyed the pattern of relatively continuous settlements, producing many abandoned towns which were relatively quite good with irrigation and agriculture (98) Ilkhanate (1256-1335) after Genghis death, Iran was ruled by several Mongol Commanders. Genghis' grandson, Hulagu Khan. by time he ascended to power, the Mongol empire had already dissolved, dividing into different factions. Arriving with

an army, he established himself in the region and founded the Ilkhanate, a breakaway state of the Mongol empire, which would rule Iran for the Next eighty years and become Persian in the Process. Hulagu Khan seized Baghdad in 1258 and put the last Abbasid caliph to death. The rule of Hulagu's great-grandson, GHAZAN (1295-1304) Saw the establishment of Islam as the state religion of the Ilkhanate. GHAZAN and his famous Iranian Vizier, Rahid al Din, brought Iran a partial and brief Economic revival. The Mongols lowered taxes for Artisans encouraged agriculture, rebuilt and extended irrigation works and improved the safety of the trade routes. As a results commerce in creased dramatically. Items from India, China and IRAN passed easily across the Asian steppes and these contacts culturally enriched IRAN. Iranians developed a new style of painting based on a unique fusion of solid, two-dimensional Mesopotamian painting with the feathery, light brush strokes and other Motifs characteristic of China.

- Timurid empire (1370-1507)

Iran remained divided until arrival of Timur, a Turco-Mongol (102) belonging to the Timurid Dynasty – like its predecessors the Timurid empire was also part of the Persianate world. Timur invaded IRAN in 1381. Timur's campaigns were known for their brutality; many people were slaughtered and several cities were destroyed (103). His regime was characterized by tyranny and llood shed, but also by its inclusion of Iranians in administrative roles and its Promotion of Architecture a Poetry. Sufi Poet Hafez's popularity became firmly established in Timurid Era that saw the compilation and widespread copying of his divan. Sufis were often persecuted by orthodox Muslims who considered their teaching blasphemous. Sufism developed a symbolic language rich with Metaphors to Obscure Poetic references

to provocative Philosophical teachings. Hafez concealed his own Sufi faith. Even as he employed the secret language of Sufism in his own work. “he brought it to perfection” [104] his work was imitated by jami, whose own popularity grew to spread across the full Persianate world [105].

- Under Iranian Historians also moved from writing in Arabic to writing their native Persian tongue (46). The rudiments of claulele – entry accounting were practiced in the Ilkhanati, Merdiban was then adopted by the Ottoman Empire.

These developments were independent from accounting Practices used in Europe. Iran’s distinctive Excellence in architecture. Finally Ilkhan as a tribal title in 19<sup>th</sup>/20<sup>th</sup> century IRAN. The title Ilkhan resurfaced among the Qashqai nomads of Southern Iran in the 19<sup>th</sup> century. Jan Mohammad Khan started using it from 1818/19 and this was continued by all the following Qashqai leaders the last Ilkham was Nasir Khan who in 1954 was pushed into exile after his support of Mosaddeq. When he returned during the Islamic Revolution in 1979, he could not regain his previous position and died in 1984 as the last Ilkhan of the Qashqai (48).

Sources : [Wikipedia](https://en.wikipedia.org/wiki/Ilkhan)



## Development of Modern Blood Transfusion Services in Iran



**Dr. Fereydoun Ala  
AB (Harvard),  
FRCP, FRCPath**

I am grateful to IAMA for so kindly inviting me to this annual meeting of the IAMA, and I am honoured to be

asked to address you.

I must confess that at first, I was reluctant to accept this kind invitation. At the age of over four score and ten, it seemed more appropriate for me to retire from public speaking.

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However, I was reminded of Ulysses’ advice to Achilles in Shakespeare’s “Troilus and Cressida”, where Achilles asks: “What, are my good deeds forgot?” and Ulysses replies:

“Time hath my Lord, a wallet at his back,  
Wherein he puts alms for oblivion,  
A great-sized monster of ingratitude.  
Those scraps are good deeds past, which are devoured

As fast as they are made, forgot as soon  
As done: perseverance, dear my Lord  
Keeps honour bright....”

So, I thought that I should take on this task and speak to you today, but rather than addressing some clinical or scientific subject, I decided that I would talk to you about the evolution of modern blood transfusion services in Iran – both regarding the situation in the distant past, which our younger colleagues may not be aware of, as well as the development of the Iranian National Blood Transfusion Service in the early 1970s. Perhaps I should start by take the liberty of reminding you of the main time-lines in the development of transfusion science, which really started with Karl

Landsteiner's discovery of the ABO blood groups in 1901. This was followed soon after by the description of the Rhesus blood group system by Landsteiner and Wiener.

But, science apart, the first real application of these discoveries came with the first World War, when vein-to-vein transfusion between donor and recipient was carried out in desperate cases, because blood soon coagulated, and could not be stored. It was not until after the start of World War II, that the use of sodium citrate to prevent clotting, together with nutrient dextrose, made it possible to store refrigerated blood for 21 days.

It was the tremendous impetus of World War II, which forged modern blood services, mainly in Europe, where exemplary centres of excellence were created which served as models for the rest of the world. The great contribution of the USA at the time, was Edwin Cohn's introduction of cold-ethanol plasma fractionation at Harvard, in 1940, which made it possible to turn human plasma into many vital, stable and highly specific "medications", such as Immunoglobulin, Albumin, and anti-hemophilic Factor VIII concentrates, which later developed into a multi-billion dollar global industry. The more recent introduction of multiple PVC blood bag assemblies, replaced the use of glass bottles, and made it possible to separate and concentrate the different blood cells within a sterile closed system, to make the best use of this precious human resource.

In Iran, very basic emergency blood services had been in existence since the early 1940s – some three decades before the establishment of the INBTS in 1972. However, without exception, blood for transfusion, whether in private hospital practice, or in government and university hospitals, was procured through disreputable dealers. Professional blood-

sellers exploited the poorest sectors of society, who suffered malnutrition, anaemia and other diseases (mainly hepatitis) as well as drug-addiction. This was even true of the Red Lion & Sun Society (the Iranian affiliate of the International Red Cross), which is currently called the Red Crescent Society.

Even military hospitals actually bribed soldiers to give blood by granting them 72 hours' leave in exchange. Needless to say, officers never donated blood! In addition, advances in modern science, laboratory technology, and proper compatibility-testing had not made much impact upon the rudimentary, fragmented, and grossly commercialized blood services available at the time.

Increasing population density and rapid advances in hospital surgery and medicine, together with the growing expectations of both the expanding middle class and highly trained medical practitioners, showed up the dangers and inadequacies of the blood services, and set the scene for fundamental reforms in this vital sector of the public health infrastructure.

I returned to Iran after completing my medical studies and apprenticeships in the UK, in 1964, and enrolled at the Tehran University Medical Faculty after going through a byzantine process where, because my medical qualification was the British MB ChB, rather than the more familiar American MD, I was actually considered to be unqualified to practice medicine, even though, so far as I know, I was the first Iranian Member of the Royal College of Physician at the time.

My first job was as Assistant Professor (Ostadyar) at the Pahlavi Hospital (now known as the Khomeini Medical Centre), with a monthly salary of 600 Tomans (roughly \$80 at the exchange rate of the time), where I was able to establish the first modern **clinical** haematology department of ten beds, with its

own separate, diagnostic laboratories, thanks to an 18,000 Pound Sterling grant from the Sir Henry Wellcome Trust in London. Needless to say, the Head of the hospital Central Laboratories was outraged for being by-passed in this way.

Our new laboratories included facilities for radio-isotopic investigation of red-cell volume and half-life, sites of cell destruction, haemoglobin electrophoresis, red-cell enzyme allotype analysis, especially for G6PD and PK, Vitamin B12 and Folate assays, as well as the conventional cell-staining techniques and diagnostic microscopy.

Haematologists, who deal with lymphomas, leukaemias, and the thalassaemias and other haemoglobinopathies, which are so prevalent in Iran, need a lot of blood for transfusion – even more so than surgeons. Yet the only blood available anywhere in Iran at the time, whether in teaching, private or government hospitals, was drawn from these professional donors.

Every morning, when I came to work at the Pahlavi Hospital, I was a witness to the disturbing spectacle of these professional blood donors being herded by a tough-looking agent, who bled them into re-usable 250 ml bottles from the Institut Pasteur, as they squatted on the pavement, just inside the entrance to the hospital, and were paid a pittance.

I must show you an extract from Darioush Mehrjui's excellent film, "Dayereye Mina", which shows you exactly how blood was obtained before the establishment of the Iranian National Blood Transfusion Service in the early 1970s.

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While waiting for the laboratory equipment which had been ordered from abroad to arrive, in order to furnish our new Haematology Department, I became involved in the

laboratory diagnosis of inherited bleeding disorders like the haemophilias A and B – the type carried by Queen Victoria, which she so generously scattered throughout most of Europe's royal families, by marrying off her carrier daughters to: Alphonso XIII in Spain; Leopold of Belgium; and of course, Tsar Nicholas II of Russia, with the famous story of the monk Rasputin. Another bleeding condition was von Willebrand's Disease (which is now recognized as the most prevalent genetically determined haemorrhagic disorder). These were truly clinical orphans, entirely neglected until then, by the medical profession in Iran. "Children are dying of water-borne diarrhoea and measles in this country! We cannot bother with these rare bleeding disorders." some of my colleagues used to say.

The only treatment options for these crippled haemophilic children, when they developed an acute haemarthrosis, was either inadequately tested fresh whole blood or plasma from the wretched blood sellers. The absence of any other treatment options for my beloved haemophiliacs was the spur which led me to plan a national blood service, which would take the rampant commercialism, which passed for blood banking, out of the marketplace, and bring it into the realm of altruism, medicine and science. I should emphasize that at that time, in the mid-1960s, no industrial coagulation factor concentrates manufactured from human plasma were available anywhere in the world, other than Fraction I-O, initially produced by Birger and Margaretha Blomback at the Karolinska Institute in Stockholm, which contained most of the fibrinogen and coagulation factor VIII from a unit of human plasma, in a concentrated form.

Fortunately, by 1965, Judith Poole in the USA, discovered a home-made product called "cryo-precipitate", which completely revolutionized

the treatment of haemophilia. Human plasma was snap-frozen in a mixture of dry ice and alcohol, and then slowly thawed at 4 degrees centigrade. A dense precipitate left in the bottle (or bag) after centrifugation, was found to contain most of the factor VIII and fibrinogen from the original plasma, which could be re-dissolved at 37 degrees centigrade. At a stroke, we were therefore able to produce an artisanal concentrated factor VIII for treating Haemophilia A, rather like making ice-cream in a bucket! This material could be accumulated and stored in our freezers for use in covering corrective orthopedic surgery for our crippled haemophile A patients.

Only a very few brave surgeons like Dr. Sheikh ol-Eslamzadeh, Zahir or Gorgi were prepared to risk major surgery in severe haemophilia, using this home-made product.

In 1971, the VIIth Congress of the World Federation of Haemophila was held in Tehran – the first time this meeting had ever been held outside of Europe or Canada. However, the programme we devised was quite unusual: since the treatment of these bleeding disorders was so integrally linked with blood transfusion science, it seemed appropriate to include plasma fractionators and transfusionists for the first time, to complement the blood coagulation scientists and doctors attending the meeting. This was the first step towards the creation of modern, centralized, national blood transfusion services.

I emphasize **national** because very few of such services in the world were national in character at the time. Blood transfusion had developed and evolved multi-focally, in different teaching centres of Europe and the United States, and it was no longer feasible to go back and centralize them all under a ‘National’ organization. In Iran, we were starting from

scratch, so it was possible to cast the Service in a National mould from the very beginning.

While in Europe and to some extent, America, the desperate exigencies of World War II had fostered the establishment of regular, voluntary blood donation as a well-accepted, altruistic principle, giving blood for strangers was an entirely alien concept in Iran. The general expectation was that a government agency should provide blood, like some neighbouring countries: in Syria for instance, to obtain a driving license, or graduate from university, one was coerced into giving blood, ensuring that one would never wish to donate blood ever again. In the United Arab Emirates, blood was imported from Florida, ensuring that HIV became prevalent in the country!

While one could learn, adopt, or import any or all of the technologies associated with testing and processing blood from abroad, the organisation of voluntary blood donation could only be researched, planned and implemented locally, in Iran. No amount of expensive equipment or generous funding could take the place of somehow motivating the public to donate “the gift of life” with no expectation of material reward.

Gaining the trust of the public, particularly the fastidious middle and upper classes of society, and persuading them that they must voluntarily donate blood anonymously to their compatriots, was a formidable task, calling for nothing less than a social revolution. This was particularly true in a country where almost everyone mistrusted their government, their lawyers and their doctors.

Potentially, establishing the tradition and the motivation for voluntary, unremunerated blood donation could be taken as a surrogate for a grass-roots, democratic movement, fostering a new-found sense of civic

responsibility, instead of expecting the government to provide for everything.

### **Organising the INBTS**

The first step was to propose the creation of an independent agency, which would bring together, under a single administration, all the disparate, fragmented, hospital-based activities, whereby each hospital had been obliged to fend for itself, merely to provide for the day's surgical list, with no regard for the next day or the future. Basically, each hospital had to contract with one of the "Blood shops" in order to cover its needs. And of course, we are talking of whole blood alone. There were no components like packed cells, platelet concentrates or plasma to be had.

I got to know one of these commercial blood dealers, and he really was an excellent business-man. Naturally, I represented a serious threat to his financial interests, as the National Blood Transfusion Service made steady progress among the ordinary urban population in Tehran, and the windows of my car were broken on a couple of occasions. However, above all, these dealers were pragmatic people, and they simply diversified into different trades such as fish-farming or raising mink.

At the start of our activities, a major public information campaign was initiated, employing every available means of communication – mass media, posters, films TV programmes and lectures, to capture the attention of every sector of society: religious leaders, trade unions, civil servants, teachers, university students, the very active Boy Scouts, the Bazaar, and of course, the upper middle classes. The information campaign set out the grave dangers of the current blood for transfusion, and the growing needs of modern medicine and surgery. We tried to motivate the public, often using *Akhbar* from Emam Ja'afar

Sadeq, the sixth Imam, or invoking Islamic principles such as *eethar* or *enfagh*. It was also crucial to reassure people of the safety of giving blood at regular intervals.

It was important to ensure the independence and stability of the political platform for such an organization. This was what would ensure its success and its survival, rather than fancy technology and a large budget alone. The new organization had to be independent in order to be able to serve everyone. That was not an easy concept to convey to the Ministry of Health, to the Red Lion and Sun Society, or to Tehran University, all of whom felt they should have exclusive control of the service, without having the slightest idea of how they would go about creating it.

Naturally, parliamentary approval for the establishment of a national blood service as a legal entity with a dedicated annual budget, was the first priority. In this, I had the indispensable help of the late Shoja' Sheikh ol-Eslamzadeh, an orthopedic surgeon who would soon be appointed as the Minister of Health and Welfare, as well as the late Khodadad Farmanfarmanian, Head of the Plan Organisation for Development (Sazemane Barnameh). The Shahbanu Farah Pahlavi fortunately accepted the patronage of the new organization; a High Council of relevant, influential individuals was appointed, a strong, beautiful emblem (which, surprisingly enough, has been retained by the post-revolutionary IBTO), designed by the German artist Karl Schlamming, was approved by the members of the Council.

The fledgling INBTS was granted start-up funding of 800.000 Tomans (equivalent to about \$100,000 USD in 1972) by the Plan Organisation.

The former premises of the "Tehran Clinic" on Avenue Villa were rented from the public-

spirited Khanome Firouzgar, for a very modest fee. We gutted the building and rebuilt it specifically for our purposes, as a clean, modern, welcoming centre, utilizing the latest, automated laboratory equipment. We had to mark the contrast between our new centre and the tawdry, filthy premises employed by the Red Lion and Sun on Khiabane Naser e-Khosrow or the Pahlavi Hospital.

Our aim was not merely to create a “supermarket” for blood and blood products. We also wanted to establish an intellectual dimension associated with science and research. University doctors and scientists were therefore recruited to staff the various departments, hitherto unheard of in relation to blood transfusion in Iran – Clinical Immunology, Cryobiology, Blood Coagulation, Virology, Cancer Immunology, Histocompatibility for a future organ transplantation programme, Antenatal serology, and Plasma Fractionation.

Even though our blood donation sessions had to address every social class and every sector of society, we decided to start at the top. It was my task to approach Cabinet Ministers, Directors of Organizations or business executives initially, in order to explain the horrors of the current blood services, and the virtues of obtaining the participation of the healthy population in providing blood for themselves, their family, or their fellow-citizens - an irresistible argument. A date was agreed for conducting a mobile blood collection session, and a modular team of doctors, impeccably uniformed donor attendants and drivers would arrive at the appointed time, equipped with folding beds; clean white sheets and all the materiel required to collect between 120 and 150 blood donations.

I would usually start the proceedings by giving a promotional talk, followed by a film. We had initially been obliged to use films and posters from the International Red Cross, or the American Association of Blood Banks, but thanks to a brilliant fifteen-minute film from Darioush Mehrju’I, we were able to show Iranian faces and local scenes instead. It was a rather expensive promotional film, because it had a lot of animation, but it was well worth it.

In a surprisingly short time, our persistence paid off, and we were soon able to meet all the needs of Greater Tehran, and it was time to think about establishing regional centres in the main provincial cities.

Shiraz was chosen as our first Regional Centre, which replicated most of the activities of the National Centre, such as donor recruitment, viral and blood group screening; blood component production; ante-natal serology, and even histocompatibility testing because the Shiraz University Nemazee Hospital was about to start a renal transplantation programme. Further Regional Centres followed soon after in Sari, Mashhad, Ahvaz and Hamadan.

However, probably the most important and far-reaching policy decision taken by the INBTS, was to propose the integration of the National Blood Service with the Armed Forces Blood Transfusion Service. Our argument was that in most neighbouring countries (and indeed, even in Britain), the Armed Forces were kept entirely separate from civil society, with their exclusive apartment blocks, recreational facilities and clubs, hospitals and clinics, together with their own (backward and mediocre) blood transfusion facilities. While this might be adequate in peace time, should a conflict or disaster occur, neither civil nor military service would be able to cope with the acute demands on their own, particularly since the techniques and equipment of each were

completely different. Besides, in time of peace, it would be entirely appropriate for army personnel to be seen to be contributing to society by volunteering their blood, and officers would naturally be invited to fulfill their leadership role by also coming forward on a regular basis.

My proposal was fortunately accepted at the highest level, and despite a good deal of opposition from certain vested interests in the Armed Forces' top brass, we were able to gain access to military garrisons both in Tehran and the Provinces, and to conduct our usual blood donor sessions among enlisted men and officers, with success. This arrangement was enormously helpful to us as we started to establish Regional Centres in provincial cities. The collaborative merger of civil and military services was almost unique, so far as I know, and I am only aware of a single exception. By 1978, the armed forces were already contributing some 12% of the total blood collection of the INBTS, throughout the country.

A significant component of our tasks at the National Service was raising the very poor standards of the downstream **clinical** transfusion practice in Iran. There was little use in obtaining blood from safe, voluntary blood donors, and in screening and processing it using meticulous quality assurance criteria, if the resulting blood products (and plasma fractions) were to be wasted and misused. This called for an extensive training programmes among technicians to foster the use of modern compatibility testing and antibody screening in hospital laboratories, among nurses, doctors, but especially among surgeons, to ensure that our precious blood products were used properly. Of course, it was not until the 1980 and 90s that this issue – probably driven initially by the advent of transfusional HIV

infection, became a clinical specialty in its own right, called “Transfusion Medicine”.

Finally, a systems analyst already working on preparing software for an ambitious National Library, was recruited to design a national data-base management system that would comprise data from the donor panel, blood screening and processing, blood issue to hospitals, as well as financial and management data. No other examples existed elsewhere in the world at the time, so this programme had to be started from scratch.

The essential services, standards and integrity of the INBTS survived the profound social and political upheaval of the Islamic Revolution in 1979 remarkably well, while a number of other promising institutions foundered or became degraded. The sheer utility of the BTS during the conflicts in Kordestan and the protracted war with Iraq, ensured the relevance of the Service, which probably saved many thousands of lives. The Iranian Blood Transfusion Organisation (IBTO) as it is now called has expanded vastly in the intervening years, in response to the population explosion which has gone from 40 million in 1979, to over 80 million, and at present, there are over 200 provincial centres throughout the country.

It is noteworthy that over 60% of donations are currently from repeat, established donors, and this is a highly significant indication of the success of this service in being adopted and accepted by the Iranian population.

In summary, after an initial period of decline and disorganization following the Islamic Revolution of 1979, the IBTO has progressively improved in quality, diversity and academic potential. It is now without question, the most progressive, well-developed and extensive blood service in the eastern Mediterranean region and beyond.

# Humanitarian Functions of IAMA

As usual, IAMA has been very active in responding to any disaster in Iran. In the first year of COVID pandemic IAMA in collaboration with 5 other major/active Iranian-American groups and many supporter groups were able to collect \$481,300, which were used for purchasing all and most of the urgent and needed medical equipment and PPE (personal Protection Equipment) and were sent to many hospitals and medical centers in Iran. We covered all corners of Iran and not only the big cities. All documents are available for review and any audit if needed and upon request.

After the urgent era of COVID pandemic, we entered the second phase of need for respiratory devices in the ICUs or post-COVID respiratory support for Emergency rooms or out-patient care medical centers or clinics. Ventilators and BiPAPs were needed, which were sent as many as IAMA could, and we covered and supplied almost all the ICUs in Iran with BiPAPs. After that the Oxygen-Concentrators of 5-liter, 10-liter or 20-liters were needed.

With cooperation with Razi Health Foundation, IAMA was able to pledge and donate 100 Oxygen Concentrators (out of 301 total) of 20 liters capacity each with 2 outlets and dual function for hospital use and home use. Each unit with extra tubing cost \$580. We sent all the 301 oxygen concentrators to 72 hospitals and medical centers and clinics in Iran. Our focus was to cover cities and centers with less or least support from the officials in Iran. Then, we received a request from a medical center in Sistan-Baloochestan (SB) province (SBP) that they urgently needed water-cooler/warmer for drinking water. We donated all remaining of the previous donations and collected a little more in Iran (we needed 10,440, 000 Iranian Toman). This project was done urgently and very quickly. We donated 2 units of 20-liter water cooler/warmer and 15,000 hygienic plastic cups for 3 months usage for a Thalassemia/dialysis center in the province of SB

And now, at this moment, we are in the process of donating 3 radiology scanners to the Abu-Ali Sina Transplant Center in Shiraz. We have received

\$1,055,000 in donations for this purpose from 4 wonderful Iranian philanthropies here in the US. Two of the scanners are in Iran now in the Custom to be cleared as a donation for the most active transplant center in Iran for use in diagnosing COVID patients and treating the transplants patients especially liver transplant patients free of charge. (The project started in November-December 2021 and it is still in process, all the documents are available for review and audit if needed upon request). IAMA is a non-for profit, non-religious and non-political organization, with official 501 (c) registration. All the documents are available to review and official audit if/when

needed upon request.

On behalf of IAMA, Dr. Amiri will be going to Honduras for a medical mission trip between October 29<sup>th</sup> through November 6<sup>th</sup> in collaboration with World Surgical Foundation (WSF) and Americas Hepato-Pacreato-Biliary Association (AHPBA) During this week, more than 150 surgeries for poor people will be performed by 20 surgeons from different subspecialties. All expenses will be covered by participants and large amounts of medical supplies donated by different people will be delivered to different hospitals in Honduras.



**Hosein Shokouh-Amiri, MD**  
IAMA, Chair of the Disaster and Humanitarian Relief Committee and Past President



**Mohammad Shokouh-Amiri, MD**  
IAMA, Coordinator of Disaster and Humanitarian Relief Committee



**Omid Ashuri, MD**  
Interim President of IAMA

## IAMA Annual Meeting Abstracts

Author : Ali Nasseri. The Valley Hospital Fertility Center, Paramus, NJ

### **Trophectoderm blastocyst (TE) biopsy results in higher pregnancy rates , lower multiple rate and fewer cycles to pregnancy in gestational carriers.**

#### **OBJECTIVE**

To determine the usefulness of comprehensive chromosome analysis by TE biopsy in gestational surrogacy

#### **DESIGN**

Retrospective case control study

#### **M+M**

Data from all cycles involving non-donor egg embryo transfers to gestational carriers (GC) at our center from April 2008 to January 2015 were reviewed. FDA screening guidelines were adhered to in all cases.

Embryos of the intended parents (IP) were created as per routine IVF protocol. There were a total of 88 embryo transfer cycles. Twenty eight cycles involved the transfer of frozen euploid blastocysts after TE biopsy. Embryos were screened for all 24 chromosomes by array CGH (group A). Of the remaining 60 cycles (group B), there were 35 fresh, and 25 frozen transfers. One fresh transfer was canceled due to embryo arrest. Paired student t-test and the Chi-squared test of independence were used for statistical analysis. P value  $<0.05$  was considered statistically significant.



## **RESULTS**

There was no difference with respect to age of the GC's ( $29 \pm 4.0$  vs  $31 \pm 5.7$ ), age of the female IP's ( $36 \pm 4.3$  vs  $36 \pm 4.6$ ), GC gravida ( $2.9 \pm 1.2$  vs  $2.8 \pm 1.5$ ), GC para ( $2.6 \pm 1.2$  vs  $2.5 \pm 1.2$ ), IP gravida ( $1.7 \pm 1.5$  vs  $1.2 \pm 1.6$ ) and IP para ( $0.50 \pm 0.74$  vs  $0.25 \pm 0.54$ ), between groups A and B, respectively. Fertilization rates (A:  $0.80 \pm 0.14$  vs B:  $0.73 \pm 0.21$ ) and the incidence of ICSI (A: 6 of 28 vs B: 20 of 60) were similar between the two groups. Group A had a significantly higher clinical pregnancy rate compared to group B ( $68\%$  vs  $38.3\%$ ,  $p < 0.02$ ), while significantly fewer embryos were transferred in group A vs group B ( $1.1 \pm 0.3$  vs  $2.1 \pm 0.8$ ). All but one patient in group A received a single embryo at transfer. That patient received 2 embryos which resulted in the sole multiple pregnancy in group A (triplets). A significantly greater multiple rate was observed in group B with 7 twins and one triplet. Although there were 5 spontaneous pregnancy losses in group B (21.7%) vs only 2 in group A (10.5%), this difference did not reach statistical significance. On the average, it required 2.6 cycles of embryo transfer to achieve a live born or ongoing pregnancy in group B vs 1.5 cycles in group A.

## **CONCLUSION**

Comprehensive chromosomal screening using TE biopsy is associated with higher pregnancy rates, fewer multiple pregnancies and lower number of cycles necessary to achieve a clinical pregnancy in gestational carriers. Use of TE biopsy for aneuploidy screening results in superior clinical outcome and it may be more economically favorable by limiting the number of embryo transfer cycles necessary to achieve a clinical pregnancy.

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## A paradigm shift in *Helicobacter pylori* diagnosis and treatment

An article review by:

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**Introduction:** The recognition of *H. pylori* gastritis as an infectious disease coupled with the increasing prevalence of clarithromycin, metronidazole, and levofloxacin resistance requires rethinking the approach to diagnosis and therapy for obtaining cure rate approaching the theoretical 100%, while at the same time adhering to the principles of antimicrobial stewardship to reduce unnecessary antimicrobial prescriptions.

**Methods:** I reviewed the most current status of *H. pylori* diagnosis and treatment recommendations.

**Results:** The highlight of the new recommended approach for diagnosis and treatment is the use of either susceptibility testing prior to antimicrobial prescription or the use of treatment regimens proven to provide high cure rates within the given geographical region as well as the use of Test of Cure after the treatment period to provide feedback and confirm treatment efficacy. Both culture and molecular susceptibility testing are now widely available in the US.

Increased emphasis on susceptibility testing ensures higher cure rates, reduces the prescription of unnecessary antibiotics, and reduces the emergence rate of antibiotic-resistant bacterial strains. The increased availability of non-invasive tests (stool test), and the availability of culture and susceptibility testing from all major diagnostic laboratories make incorporating such tests easy and an essential part of the treatment plan for *H. pylori* cases.

The goal is to reduce the emergence of antibiotic resistance, unnecessary antibiotic prescription side effects, and financial burden for the patients.

**Conclusion:** The now universal availability of susceptibility testing for *H. pylori* has resulted in a paradigm shift in both diagnosis and therapy such that high cure rates are now obtainable provided one adheres to the new recommendations.

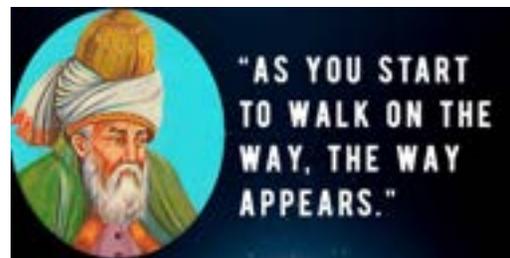
## Title: Unusual case of skin BCC with distant bone metastasis

Azadeh Khayyat, Hamid Nasrolahi, Mohammad Ali Esmail pour,

**Introduction:** Skin BCC is the most common type of skin cancer, and it is most frequently local. It is usually manageable due to rarity of distant metastasis. Diagnosing and treating metastatic skin basal cell carcinoma (BCC) is challenging specially with metastasis to distant bones. It is more important than ever to distinguish this entity.

**Case description:** On pathology, a 48-year-old male patient came with an 8x10 cm ulcerated plaque on his left cheek, which was found to be basal cell. He had radiation and chemotherapy after getting incomplete treatments for the previous three years. The bone scan revealed bone lesions in multiple distal sites, and bone biopsy and pathology results confirmed metastatic bone BCC.

**Discussion:** Due of its rarity, diagnosing and managing BCC with metastasis, particularly to distal bones, can be difficult. As a result, the patient's prognosis is dismal. When it is diagnosed, the optimal therapy and follow-up play a critical role in the patient's survival.



## Can educating midwifery students on oral health care in pregnancy improve their knowledge and attitude?



S Seyedzadeh Sabounchi, DDS, MSc, Sh Sevedzadeh Sabounchi, DDS, PhD, Maryam Safari, DDS

**Objective:** Nurse and midwifery students can have an important role in transferring oral and dental health care information to expecting mothers as they are continuously involved with pregnant women and visit them regularly. The aim of this study was to assess the effect of an educational intervention on knowledge and attitude of midwifery students on oral health in pregnancy.

**Methods:** The study type was experimental with pre-test and post-test design among two interventional and control groups. Self-administered questionnaires were distributed before, immediately after the intervention, and three months later. The study participants were 60 midwifery students at a Midwifery School in Western Iran. The questionnaires were consisted of demographic, perceived and actual knowledge and attitude questions. The validity and reliability were confirmed at the beginning of the study. Statistical analysis was conducted in SPSS version 22 by using T-test, Mann-Whitney U, ANCOVA and Pearson correlation tests and P-value at 0.05.

**Results:** Total mean age of participants was  $22.06 \pm 0.38$  (Min=17, Max=35). Mean total pre-test knowledge scores (range: 0 to 10) in experimental and control groups were  $4.6 \pm 0.25$  and  $4.7 \pm 0.03$  respectively and after three months reached to  $8.8 \pm 0.17$  and  $5.5 \pm 0.29$ . The ANCOVA test results demonstrated that post-test knowledge and attitude scores had significantly increased after controlling for pre-test scores ( $P > 0.05$ ).

**Conclusions:** Among patient level characteristics pain level and age had the highest fit in the RF predictive model. At the organizational level providers such as registered nurses and physician assistants had higher fit in the RF model compared to other providers. Those patients with non-Hispanic

race/ethnicity were more likely to receive opioids compared to other race/ethnicities.

## Surgical Ampullectomy in Management of Benign and Malignant Lesions of Ampullary and Peri-ampullary Region



Hosein Shokouh-Amiri, Muhammad S. Naseer, Sathya N. JaganMohan, Anil Veluvolu, David Dies, Gregory Wellman, Quyen D. Chu, Gazi B. Zibari

Willis Knighton Health System, Shreveport, LA

### Introduction:

Malignant ampullary lesions are treated by a Whipple operation. When the lesion is small, local resection can be appealing if the resection margins can be negative with more than 1 mm. However, this approach is underutilized. We are reporting our experience with the surgical ampullectomy (Figure 1) in the management of benign and malignant lesions of ampullary and peri-ampullary region. The aim of this study was to evaluate the safety and oncological result of surgical ampullectomy, conversion rate to Whipple, recurrence rate of malignant lesions, and patient survival in the management of ampullary and periampullary lesions.

### Method:

From Oct 2010 to Aug 2021, we included 41 patients who had an ampullary or peri-ampullary lesion and were planned for surgical ampullectomy. Data were collected on patient demographics and characteristics of lesion (location, size, benign/malignant, margins, grading, and staging). Perioperative details such as OR time, estimated blood loss (EBL), length of hospital stay (LOS), opioid use during admission measured as total Morphine Milligram Equivalents (MME), and blood transfusion were calculated. Intraoperative and 90-day postoperative complications were evaluated. Our main outcomes of the study were the conversion rate of surgical ampullectomy to Whipple, recurrence rate of malignant lesions, and 5-year patient survival.

### Results:

Table 1 summarizes the patient demographics and study results. Lesions were predominantly at the ampulla (82.9%) and had a mean size of 3.4 cm. Lesions were 19.1% malignant, 7.3% with positive- resection margins, 23.1% of grades 3-4, and 44.4% with stages 2B-4. There were 8 and 2 patients who required intraoperative and postoperative blood transfusion, respectively. Mean OR time was 187 mins; mean EBL was 257 ml; and average LOS was 9.5 days. Opioid use during admission was equivalent to MME of 91.3 mg. One patient had an intraoperative complication of massive bleeding who had a completion Whipple surgery after three days. Four patients had postoperative complications, with three of them having the clavian-dindo classifications of 3b-4 and none of them resulting in patient death. Five ampullectomies were converted to Whipple, with three of them performed during the same operation and two performed afterwards in another operation. Three ampullectomy patients had a recurrence of their malignant lesions after 16, 18, and 21 months respectively. Six patients in total died within five years of their surgery, of whom 4 patients had malignant lesions. The average survival time for the expired patients is 21.3 months.

**Conclusion:**

Considering a small sample size, surgical ampullectomy is a feasible, safe and oncologically equal option in the management of malignant lesions. It has low conversion rate to Whipple, low recurrence rates, and good long-term results. We recommend it for small malignant lesions if one can get clear resection margins of more than 1 mm.

Figure 1: Intraoperative Image of Ampullectomy with Stents in Pancreatic and Biliary Ducts

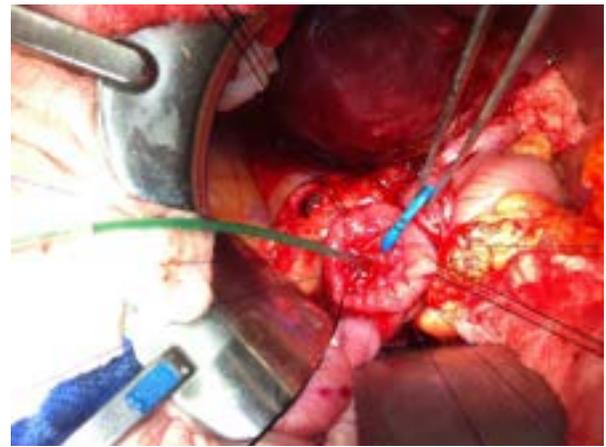


Table 1: Results

|  |   |  |  |
|--|---|--|--|
| Age (y), mean ± SD                               | Gender (male), % [n]                                | Race (Caucasian), % [n]                                | BMI, (kg/m <sup>2</sup> ), mean ± SD               |
| Location of lesions, % [n]                       | -Ampullary  | -Peri-ampullary  |  |
| Lesion size (cm), mean ± SD                      | Malignant lesions, % [n]                            | Grading, %   |  |
| - Grades 3 + 4                                   |   |  |  |
| - Grades   | 1   | +  | 2  |
| Staging,   |   |  | %  |
| - Stages   | 2B  | +  | 3A   |
| - Stages   | 1A  | +  | 1B   |
| Margins  | (positive),   |  | %  |
| Need for intraoperative blood transfusion, % [n] | Intraoperative blood transfusion (units), mean ± SD | Need for postoperative blood transfusion, % [n]        | Postoperative blood transfusion (units), mean ± SD |
| Operative time (mins), mean ± SD                 | Estimated blood loss (ml), mean ± SD                | LOS (d), mean ± SD                                     | Perioperative total MMEs (mg), mean ± SD           |
| Intraoperative complications, % [n]              | 90-day postoperative complications, % [n]           | Conversion rate to Whipple, % [n]                      | Recurrence rate, % [n/total malignant lesions]     |
| Recurrence period (months), mean ± SD            | 5-year patient survival, % [n]                      | Survival time for the expired patients (months), % [n] | Average follow-up duration (months), mean ± SD     |
| Total number of patients (n=41)                  | 63.8 ± 11.3   | 53.7   | [22]   |
|  | 65.9 [27]   | 30.2 ± 8.2   |  |
|  | 82.9 [34]   | 17.1 [7]   | 3.4 ± 2.7 46.3 [19]                                |
|  | 23.1  | 76.9   |  |

44.4  
 55.6  
 7.3 [3]  
 19.5 [8]  
 2.8 ± 2.7  
 4.9 [2]  
 2.0 ± 0.0 186.9 ± 77.8 257.4 ± 531.9 10.2 ± 6.2  
 91.3 ± 96.5 2.4 [1]  
 9.8 [4] 12.2 [5] 15.8 [3/19] 18.3 ± 2.5 85.4 [35]  
 21.3 ± 22.1 43.1 ± 27.0

**Outcomes of Simultaneous Kidney-Pancreas Transplantation in Patients with Type-1 and Type-2 Diabetes Mellitus**



Hosein Shokouh-Amiri,  
 Muhammad S. Naseer, Sana Badar, Robert McMillan,  
 Donnie Aultman, Srijan Tandukar, Neeraj Singh,  
 Gazi B. Zibari  
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**Introduction:**

Advantages for type-2 diabetes mellitus (T2DM) patients receiving simultaneous kidney- pancreas transplantation (SKPT) as compared to kidney transplantation are shorter waiting times and availability of better-quality organs. UNOS approved SKPT for T2DM in 2014. We listed patients with T2DM and ESRD for SKPT with the following criteria: (1) age < 55 years, (2) insulin requirement ≤ 1 unit/kg body weight, (3) BMI ≤ 32 kg/m2. The aim of this study was to measure the change in volume of SPKT and compare outcomes between SKPT T1DM and T2DM recipients.

**Method:**

From Feb 2010 to Dec 2021, 62 T1DM and 36 T2DM SKPT recipients were studied. BMI, c-peptide, HbA1c, and e-GFR were evaluated pre-transplant and post-transplant until 1-year. Outcomes included volume of SKPT pre-and post- UNOS approval of SKPT for T2DM, complications, death-censored 5-year kidney and pancreas graft survival, and 5-year patient survival.

**Results:**

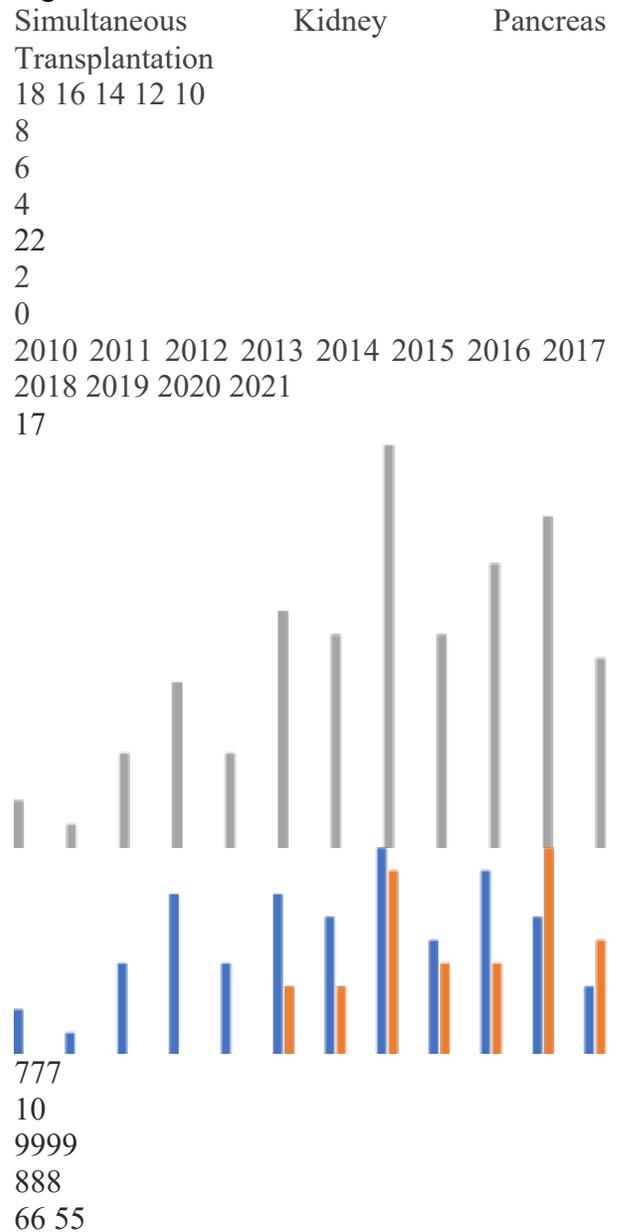
Among 98 SKPT, 18 (T1DM) were done before and 80 (44 T1DM and 36 T2DM) after the UNOS approval of SKPT in T2DM,

translating to an increase in SKPT from 3.6/year to 11.4/year (216.7% increase) (Figure 1). T2DM patients were older, gained weight post- transplantation, and had higher BMI and e-GFR at 1-year post-transplant (Table 1). There were no differences in complications and graft and patient survival (Figure 2).

**Conclusions:**

UNOS approval of SKPT for T2DM led to an increase in SKPT with no differences in graft or patient survival between T1DM and T2DM patients. Weight gain should be carefully monitored and managed post-transplant in SKPT T2DM recipients.

Figure 1: Volume of SKPT



T1DM T2DM Total  
 444444 333  
 11 00000  
 14 12

Number of Transplants

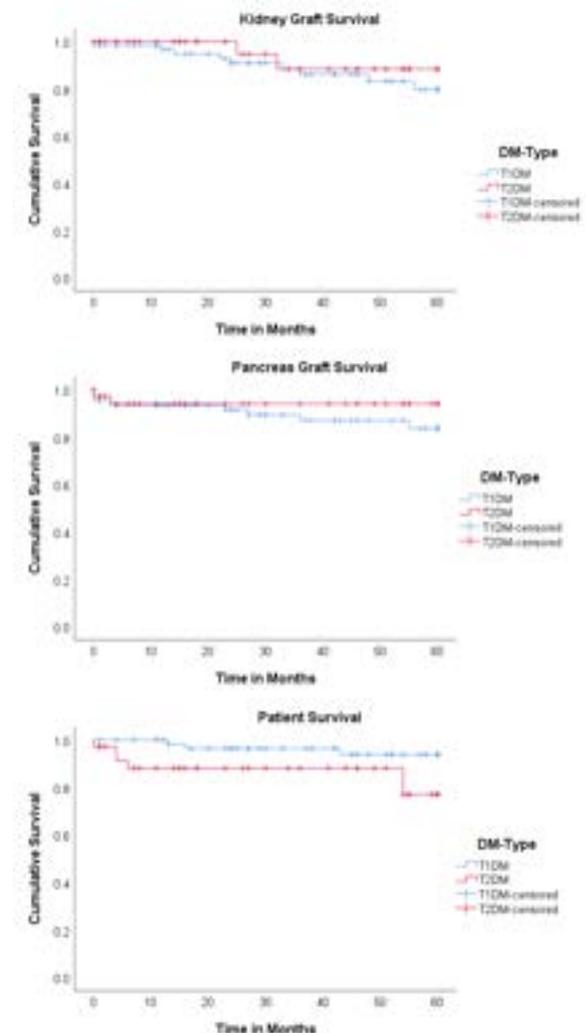
Table 1: Results

| Male, % (n) | Age at Onset of DM (Y), Mean ± SD | Pre-Tx Dialysis Duration (Y), Mean ± SD | C-peptide (ng/ml), Mean ± SD | e-GFR (ml/min/1.73m <sup>2</sup> ), Mean ± SD | Cumulative 1-Year Pancreas Rejection Episodes, n (range) | 1-Year Complications, % |
|-------------|-----------------------------------|---|------------------------------|---|--|-------------------------|
| 62.9 (39)   | 13.8 ± 8.3                        | 1.7 ± 1.6                               | 25.9 ± 4.0                   | 62.9 (39)                                     | 13.8 ± 8.3   | 1.7 ± 1.6               |
| 35.7 ± 2.1  | 8.4 ± 1.4                         | 62.0 ± 18.6                             | 16 (0-3)                     | 10.9  | 3.6  | 1.9                     |
| 100 (18)    | 85.5 (53)                         | 95.2 (59)                               | 55.6 (20)                    | 0.47  |  |                         |

| T1DM (n=62)                              |             | T2DM (n=36) |  | P-value |
|--|-------------|-------------|--|---------|
| Age (Y), Mean ± SD                       | 40.7 ± 9.7  | 47.5 ± 8.6  |  | <0.01   |
| African American, % (n)                  | 58.1 (36)   | 61.1 (22)   |  | 0.93    |
| Pre-Tx Insulin Use (U/kg/day), Mean ± SD | 39.6 ± 22.8 | 40.8 ± 28.5 |  | 0.82    |
| BMI (kg/m <sup>2</sup> ), Mean ± SD      |             |             |  |         |
| -1-year post-Tx                          | 26.7 ± 4.6  | 32.0 ± 3.7  |  | <0.01   |

|  |            |            |       |
|--|------------|------------|-------|
| -Pre-Tx  | 0.4 ± 0.8  | 5.5 ± 4.8  | <0.01 |
| HbA1C (%), Mean ± SD                                   |            |            |       |
| -1-year post-Tx  | 5.2 ± 0.4  | 5.3 ± 0.4  | 0.42  |
| -Pre-Tx  | 13.0 ± 7.9 | 12.6 ± 9.2 | 0.88  |
| Cumulative 1-Year Kidney Rejection Episodes, n (range) | 17 (0-5)   | 2 (0-1)    | <0.05 |
| 1-Year Complications, %                                |            |            |       |
| - Pancreatitis   | 3.7        | 6.1        | 0.61  |
| - Anastomotic Leak                                     | 1.8        | 0          | 0.44  |
| - Wound Infection                                      | 3.6        | 3.0        | 0.88  |
| - Perinephric Hematoma                                 | 1.8        | 2.9        | 0.73  |
| Volume of SKPT after UNOS approval 2015-2021, % (n)    | 55 (44)    | 45 (36)    | -     |
| Death-censored 5-year pancreas graft survival, % (n)   | 87.1 (54)  | 94.4 (34)  | 0.41  |

Figure 2: Graft and Patient Survival



## **Role Of Pancreas Transplant in Management of Patients with Diabetes Mellitus**

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**John C. McDonald Regional  
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### Diabetes Mellitus

Diabetes is a worldwide disease. 463 million adults have diabetes worldwide; According to Centers for Disease Control and Prevention [CDC], in 2020 more than 34 million Americans have diabetes (11% of the U.S. population). An estimated 700 million adults worldwide will have diabetes by 2045. According to a report in 2020, (International Diabetes Federation [IDF] 2020), an estimated 1.5 million new cases of diabetes is recorded in the United States each year. (American Diabetes Association [ADA], 2020). A research team at the Institute for Alternative Futures predicts the total number of Americans with diabetes will increase from 35.6 million in 2015 to 54.9 million in 2030.

Diabetes is the 7th leading cause of death in the United States (ADA, 2020). Among U.S. adults aged 18 years or older with diagnosis of diabetes, an estimated 37% also had

chronic kidney disease, too (CDC, 2020). In USA, DM is the leading cause of ESRD (44%), and 40% of patients on kidney transplant list are diabetic.

There are two types of diabetes mellitus. 5-10% of patients have type I DM. They are on insulin from the beginning and one of the definitive treatment for type I DM is Pancreas transplantation. 90-95% of patients with DM are type II diabetics. They are insulin resistant in the beginning and later on may become insulin deficient. Treatment for type II DM patients include dietary regimen, oral hypoglycemics, Insulin and Obesity surgery. In some patients with type II diabetes, pancreas transplantation is helpful to treat their disease. (Initially DM II was contra indication for transplant).

DM is not only dysregulation of glucose and insulin requirement but is responsible for several important secondary complications which include:

Retinopathy

Nephropathy

Peripheral neuropathy

Gastroparesis

Erectile dysfunction

Hypoglycemia unawareness (most dangerous and life-threatening complication)

Coronary artery disease

Dyslipidemia

Pancreas Transplantation together with renal transplant is a well-accepted treatment for Type I diabetic patients who have End Stage Renal Disease (ESRD), Type I diabetic patients with labile glucose control can have Pancreas Transplant Alone (PTA), Type I diabetic patients with prior kidney transplant can also have a Pancreas After Transplant (PAK). A small group of patients with Type II diabetes mellitus can benefit from pancreas transplant, too.

Table 1 shows the indication for pancreas transplant in diabetes patients.

| Condition   |                   |
|---|-------------------|
| End-stage nephropathy   | a)Combi<br>b)Panc |
| Incipient diabetic nephropathy  | Pancre            |
| Severe management problems <ul style="list-style-type: none"> <li>• Hyperlabile diabetes</li> <li>• Unawareness of hypoglycemia</li> <li>• Defective hormonal counter- regulation to hypoglycemia</li> <li>• Subcutaneous insulin resistance</li> </ul> | Pancre            |
| Endocrine and exocrine insufficiency following total <u>pancreatectomy</u>  | Pancre alone      |

The great majority of patients with type I diabetes are on medical treatment and

only a few patients get pancreas transplants, though a successful whole organ pancreas transplant provides the best glyceimic control to patients suffering from IDDM

Most pancreas transplants (up to 85%) are in combination with renal transplant when kidney had already failed, and patients have other multiple secondary complications of DM. Currently only 10-15% of IDDM patients receives a pancreas transplant alone, but usually at a later stage when patients have already developed hypoglycemic unawareness. One should remember that pancreas transplants only corrects insulin deficiency, and secondary complications of DM at best improves very slowly or not at all.

Candidates for pancreas transplant will undergo a very comprehensive evaluation. Preoperative Evaluation include:

- Cardiovascular
- Neurologic
  - Exercise ECG
  - Electromyography
  - Coronary arteriography (if indicated)
- Ophthalmologic
  - Iliac arteriography
  - Fundus photography (if indicated)
  - Fluorescein

Angiography  
Gastrointestinal  
Upper GI series  
Renal  
Gastroscopy  
Creatinine clearance

Renal biopsy

Detailed psychosocial evaluation to prognosticate their compliance with immunosuppression therapy and lifelong follow up.

Urinary Tract

Cystoscopy (If indicated)  
Residual urine volume

After all these tests have been done and no contraindication was identified, the patient will be listed in United Network for Organ Sharing (UNOS) wait list usually for a long period before they get an offer for transplant. After a successful transplant, all the patients will be on lifelong immunosuppression.

Immuno Suppression (IS)

All patients who get a transplant need a lifelong immunosuppression to prevent rejection of the transplanted organ.

1. Induction IS

Anti-lymphocyte Thymoglobulin and high dose steroids.

2. Maintenance IS

A . Calcineurin inhibitors  
(Cyclosporin and Prograf)

B. Antimetabolites (Imuran,  
Cellcept, Myfortic)

C. Steroids.

These medications are very potent and can cause serious side effects if not monitored properly.

Complications of Long- term immunosuppression Bone marrow suppression, Nephrotoxicity, Diabetogenic, opportunistic infection, Risk of malignancy. These are not different from any other organ transplant.

With safer immunosuppression one should consider doing pancreas transplant much earlier to prevent all secondary complications of DM which will be a completely new approach to pancreas transplantation. Patient and family should be informed in detail about the advantages and disadvantages of this approach. Ideally should be under special investigational protocol.

Pancreas Transplantation

Basically, patients with DM need to have only insulin secreting part of pancreas which can be achieved by either:

- a. Islet transplant
- b. Stem cell transplant

Current result of islet transplant and stem cell transplant is nowhere near to the whole organ transplant and until we find a way to reliably transplant islet or stem cell with comparable results, we will continue to use the whole organ transplant.

Whole organ consists of 2 important parts. Endocrine and Exocrine. During transplant:

A. Endocrine part can be implanted by either of systemic or portal drainage.

B. Exocrine part of the pancreas allograft can be attached to:

1. Bladder (button or whole duodenum)
2. Enteric
  - a. Gastric
  - b. Duodenal
  - c. Small bowel- loop; roux-en-y

Pancreas transplantation for management of DM:

- Islet
- Stem cell
- Segmental- (A. cadaver B. living related)
- Whole organ-cadaveric

There are different techniques of transplanting pancreas, all of which should address both endocrine and exocrine part of pancreas.

Techniques:

Endocrine Systemic, Exocrine Enteric

Endocrine Systemic, Exocrine Bladder

Endocrine Portal, Exocrine Enteric

- Loop
- Roux-en-y
- Gastric
- Duodenum-duodenal

Author's own technique of portal endocrine (Ref 1,2) was designed in 1990 (Figure 1) and has been used since then by 25% by centers all over the world. In 2007, they modified the technique of portal enteric to porto gastric (Ref 3) (Figure 2). Though 75% of transplant centers use the systemic enteric technique (Ref 4) (Figure 3)

*Figure 1*

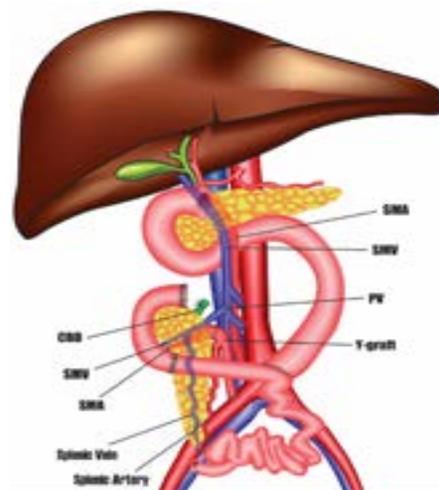
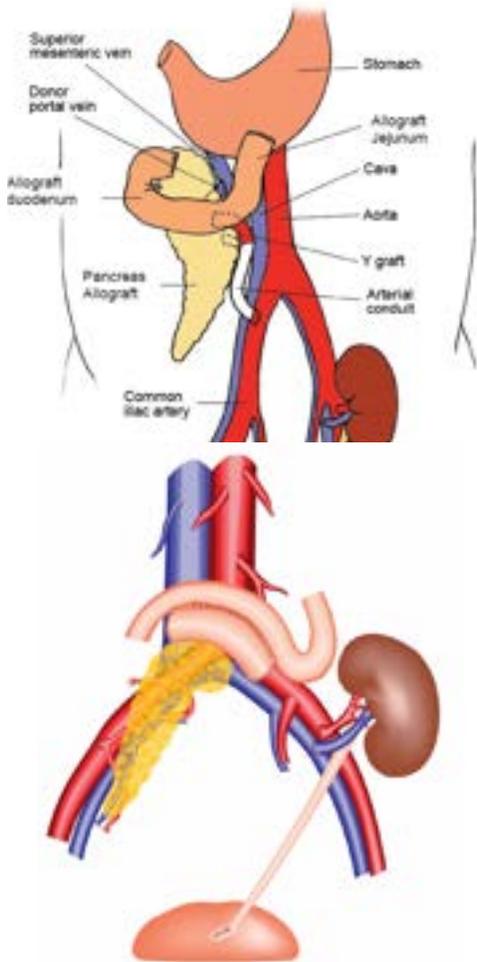


Figure 2

Portal Enteric

Porto Gastric



Simultaneous Kidney-Pancreas Transplantation for type II DM

UNOS/OPTN approved simultaneous pancreas-kidney transplantation (SKPT) in Oct 2014 for type-II diabetic patients (c-peptide > 2 ng/mL) with the goals of reducing organ wastage and increasing utilization.

After Jan 2015, we listed type-II diabetic patients with ESRD or e-GFR ≤ 20 ml/min/m<sup>2</sup> for SKPT with the

following criteria for Patients with DM II:

1. Minimum insulin requirement 1u/Kg per day for more than 5 years
2. BMI <30 Kg/m<sup>2</sup>
3. Absence of severe cardiac or peripheral vascular disease.

Primary outcomes were to compare death-censored 5-year graft survival and patient survival between patients with type-I and type-II DM undergoing SKPT. Secondary outcome was to measure the change in volume of SKPT since UNOS approved it for type-II DM patients. Since then, we have done more than 150 pancreas transplant for selected type II diabetic patients with similar results to patients with type I DM. Meanwhile, we increased our activity of transplanting pancreas for diabetic patients more than 220%.

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## Psychiatric Medications for Non-Psychiatrists

Jamshid A. Marvasti, MD



Greek philosophers divided psych from soma and this pattern was followed by many others. However, it is more evident that psych is part of soma, as all psychological conditions and behavioral presentations are accompanied by biochemical materials ( neurotransmitters, hormones). Metaphorically, one can look at psych as a drop of ink and soma as a glass of water. When a drop of ink is added to the glass, soon after they become one, and can no longer be separated.

A high number of patients who come to a PCP may have physical problems that caused by psychological issues, or they may have psychological problems which are reactions to somatic issues. It is wise for PCPs to have a holistic attitude, diagnose psychiatric issues and start treatment, as patients are more comfortable seeing their PCP over a psychiatrist. It is not surprising that most antidepressant/antianxiety are prescribed by PCP rather than psychiatrists.

In this presentation, we explore antidepressant and antianxiety medications. We explain what medical problems or non-psychiatric medications may cause depression or anxiety.

We review the side effects of psychiatric medications which may present as physical symptoms. The initial and therapeutic dose of psychiatric medications are also discussed. We indicate when a patient may be referred to a mental health specialist.

SSRI antidepressants are first treatment options for anxiety. Benzodiazepines, due to their addiction capacity, would be considered second line of treatment and may be prescribed for only short period.

SSRI are the most frequent antidepressant and antianxiety medication that are prescribed. Most common SSRIs include Prozac, Zoloft and Lexapro.

SNRIs (Serotonin Norepinephrine Reuptake Inhibitors) include Effexor and Cymbalta.

SSRIs are also effective in treatment of OCD, Premenstrual Dysphoric Disorder (PMDD), PTSD, selective mutism, separation anxiety and school phobia.

## Intention to receive COVID-19 vaccine during pregnancy: A systematic review and meta-analysis

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## Abstract

**Objective:** This meta-analysis aimed to assess the level of intent to receive COVID-19 vaccination and demographical factors influencing vaccine uptake among pregnant individuals.

**Study design:** PubMed, Scopus and archive/pre-print servers were searched up to 22nd May, 2021. Cross sectional surveys reporting the percentage of the pregnant individuals intending to get a COVID-19 vaccine were considered eligible for meta-analysis. This review was registered with PROSPERO (CRD42021254484). The primary outcome was to estimate the prevalence of COVID-19 vaccination intent among pregnant population. The secondary outcome was to evaluate the factors influencing intention for vaccination.

**Results:** Twelve studies sourcing data of 16,926 individuals who identified as pregnant were eligible. The estimated intention for receipt of COVID-19 vaccine among women who were pregnant was 47% (95% CI: 38% - 57%), with the lowest prevalence in Africa 19% (95% CI: 17% - 21%) and the highest in Oceania 48.0% (95% CI: 44.0% - 51.0%). Uptake of other vaccines (influenza and/or Tdap) during pregnancy was associated with higher rate of intent to receive the COVID-19 vaccine (OR = 3.03; 95% CI: 1.37–6.73; P 0.006).

**Conclusion:** The intent to receive COVID-19 vaccine is relatively low among women who are pregnant and substantially varies based on country of residence. In our meta-analysis, intent of women who were pregnant to receive the COVID-19 vaccine was significantly associated history of receiving of influenza or Tdap vaccine during pregnancy. Given that in

every country only a minority of gravidae have received the COVID-19 vaccine, despite known risks of maternal morbidity and mortality with no evidence of risks of vaccination, highlights the importance of revised approaches at shared decision making and focused public health messaging by national and international advisories.

**Keywords:** COVID-19, SARS-CoV-2, Vaccine, Meta-analysis, Pregnancy, Coronavirus

## Prenatal risk factors of neurodevelopmental impairment after fetoscopic laser photocoagulation for twin-twin transfusion syndrome: systematic review and meta-analysis



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## Abstract

**Objective:** Monochorionic twins with twin-twin transfusion syndrome (TTTS) treated with fetoscopic laser photocoagulation (FLP) are at increased risk of neurodevelopmental impairment (NDI). This meta-analysis aimed to identify the prevalence and prenatal risk factors of NDI in TTTS survivors treated with FLP.

**Methods:** We performed a search in PubMed, EMBASE, Scopus and Web of Science from database inception to 13 February 2021. A random-effects model was used to pool the mean differences or odds ratios (OR) with the corresponding 95% CI. Heterogeneity was assessed using the  $I^2$  statistic.

**Results:** Nine studies with a total of 1499 TTTS survivors were included. The overall incidence of NDI was 14.0% (95% CI, 9.0–18.0%). Occurrence of NDI in TTTS survivors was associated with higher gestational age (GA) at FLP (weeks) (mean difference, 0.94 (95% CI, 0.50, 1.38)  $P < 0.001$ ;  $I^2$  0%), lower GA at delivery (weeks) (mean difference, -1.44 (95% CI -2.28 to -0.61)  $P < 0.001$ ;  $I^2$  49%) and lower birth weight (grams) (mean difference, -343.26 (95% CI -470.59 to -215.92)  $P < 0.001$ ;  $I^2$  27%). Evaluation of different GA cut-offs showed that preterm birth  $< 32$  weeks was associated with risk of NDI later in childhood (OR 2.25, 95% CI 1.02, 4.94,  $P$  0.04;  $I^2$  35%). No statistical difference was found between cases with and those without NDI in the incidence of Quintero stages of TTTS, recipient and donor status, post-laser TAPS, recurrence of TTTS, small for gestational age or co-twin fetal demise.

**Conclusion:** TTTS survivors with greater GA at the time of FLP, lower GA at delivery and lower birth weight are at higher risk of developing NDI. No significant association was found between Quintero stage of TTTS and risk of NDI. Our findings may be helpful for parental counseling and highlight the need for future studies to understand better the risk factors of NDI in TTTS survivors.

## Role of Normothermic Machine Perfusion in Liver Transplantation: Current Trends and Outcomes



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## Abstract

### Background

Liver transplantation is the only known curative treatment option for end-stage liver diseases and failure; however, there is an imbalance between the number of available liver organ for transplant and the number of patients as recipients due to shortage of suitable organs. In recent years, ex vivo liver machine perfusion has been introduced to liver transplantation, as a mean to expand the donor organ pool. Studies showed that not only using normothermic machine perfusion can increase the pool of transplantable discarded livers but also it is a promising strategy to further improve graft resilience and performance .

### Methods

A systematic literature search of PubMed and [ClinicalTrials.gov](https://www.clinicaltrials.gov) registry was performed. A three-stage independent screening method was applied. inclusion criteria for this review were published prospective , retrospective , clinical

trials and systematic reviews studies using normothermic machine perfusion device .

## Results

Twenty-two articles on normothermic liver machine perfusion with patients and graft survival rate were identified. These studies have demonstrated the safety and efficacy of normothermic liver machine perfusion for the purpose of discarded liver preservation in both standard and expanded criteria donors following patients and grafts follow ups . The overall number of livers that went under NMP were 568 in all the studies which 503 of the livers were transplanted (88.6%) . The 30,90,180 days and 1-year patients and grafts survival rates were promising.(Fig1)

## Conclusion

Normothermic machine perfusion is a novelty method using in the process of liver transplantation and can lead to the expansion of liver donor pool by revitalizing discarded livers. Our study was able to show the promising outcomes for both patients and grafts which were achieved in many human clinical studies around the world using normothermic machine perfusion as a method of liver preservation and revitalization.

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## **Trophectoderm blastocyst (TE) biopsy results in higher pregnancy rates , lower multiple rate and fewer cycles to pregnancy in gestational carriers.**

### OBJECTIVE

To determine the usefulness of comprehensive chromosome analysis by TE biopsy in gestational surrogacy

### DESIGN

Retrospective case control study

M+M

Data from all cycles involving non-donor egg embryo transfers to gestational carriers (GC) at

our center from April 2008 to January 2015 were reviewed. FDA screening guidelines were adhered to in all cases.

Embryos of the intended parents (IP) were created as per routine IVF protocol. There were a total of 88 embryo transfer cycles. Twenty eight cycles involved the transfer of frozen euploid blastocysts after TE biopsy. Embryos were screened for all 24 chromosomes by array CGH (group A). Of the remaining 60 cycles (group B), there were 35 fresh, and 25 frozen transfers. One fresh transfer was canceled due to embryo arrest. Paired student t-test and the Chi-squared test of independence were used for statistical analysis. P value  $< 0.05$  was considered statistically significant.

## RESULTS

There was no difference with respect to age of the GC's ( $29 \pm 4.0$  vs  $31 \pm 5.7$ ), age of the female IP's ( $36 \pm 4.3$  vs  $36 \pm 4.6$ ), GC gravida ( $2.9 \pm 1.2$  vs  $2.8 \pm 1.5$ ), GC para ( $2.6 \pm 1.2$  vs  $2.5 \pm 1.2$ ), IP gravida ( $1.7 \pm 1.5$  vs  $1.2 \pm 1.6$ ) and IP para ( $0.50 \pm 0.74$  vs  $0.25 \pm 0.54$ ), between groups A and B, respectively. Fertilization rates (A:  $0.80 \pm 0.14$  vs B:  $0.73 \pm 0.21$ ) and the incidence of ICSI ( A: 6 of 28 vs B: 20 of 60) were similar between the two groups. Group A had a significantly higher clinical pregnancy rate compared to group B ( 68% vs 38.3%,  $p < 0.02$ ), while significantly fewer embryos were transferred in group A vs group B ( $1.1 \pm 0.3$  vs  $2.1 \pm 0.8$ ). All but one patient in group A received a single embryo at transfer. That patient received 2 embryos which resulted in the sole multiple pregnancy in group A (triplets). A significantly greater multiple rate was observed in group B with 7 twins and one triplet. Although there were 5 spontaneous pregnancy losses in group B (21.7%) vs only 2 in group A (10.5%), this difference did not reach statistical significance. On the average, it required 2.6 cycles of embryo transfer to achieve a live born or ongoing pregnancy in group B vs 1.5 cycles in group A .

## CONCLUSION

Comprehensive chromosomal screening using TE biopsy is associated with higher pregnancy rates, fewer multiple pregnancies and lower number of cycles necessary to achieve a

clinical pregnancy in gestational carriers. Use of TE biopsy for aneuploidy screening results in superior clinical outcome and it may be more economically favorable by limiting the number of embryo transfer cycles necessary to achieve a clinical pregnancy.

### **Is Xenotransplantation the Future of Organ Transplantation?**



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The increasing life expectancy of humans has led to a growing numbers of patients with chronic diseases and end-stage organ failure. Transplantation is an effective approach for the treatment of end-stage organ failure; however, the imbalance between organ supply and the demand for human organs is a bottleneck for clinical transplantation. Therefore, xenotransplantation might be a promising alternative approach to bridge the gap between the supply and demand of organs, tissues, and cells; however, immunological barriers are limiting factors in clinical xenotransplantation. Thanks to advances in gene-editing tools and immunosuppressive therapy as well as the prolonged xenograft survival time in pig-to-non-human primate models, clinical xenotransplantation has become more viable. In this review, we focus on the evolution and current status of xenotransplantation research,

including our current understanding of the immunological mechanisms involved in xenograft rejection, genetically modified pigs used for xenotransplantation, and progress that has been made in developing pig-to-pig-to-non-human primate models. Three main types of rejection can occur after xenotransplantation, which we discuss in detail: (1) hyperacute xenograft rejection, (2) acute humoral xenograft rejection, and (3) acute cellular rejection. Furthermore, in studies on immunological rejection, genetically modified pigs have been generated to bridge cross-species molecular incompatibilities; in the last decade, most advances made in the field of xenotransplantation have resulted from the production of genetically engineered pigs; accordingly, we summarize the genetically modified pigs that are currently available for xenotransplantation. Next, we summarize the longest survival time of solid organs in preclinical models in recent years, including heart, liver, kidney, and lung xenotransplantation. Overall, we conclude that recent achievements and the accumulation of experience in xenotransplantation mean that the first-in-human clinical trial could be possible in the near future. Furthermore, we hope that xenotransplantation and various approaches will be able to collectively solve the problem of human organ shortage.



## Association of Oral Hygiene Related Life Style Charactersitics with Oral Health Status

Sepideh Sabounchi DDS, MS



### Abstract

Aims: Variety of risk factors can influence initiation and treatment of gum disease. The purpose of this study was to assess the effect

of oral hygiene behavioural factors on the health of gum and tooth supporting tissues.

**Methods:** In a cross-sectional study 130 participants attending dental clinic were recruited. Knowledge, attitude, and oral hygiene behaviours were assessed. In addition, participant's demographic factors along with their oral and dental clinical examination findings were recorded.

**Results:** 49.2% of participants had healthy tooth supporting tissue and the average of oral hygiene level was fair to poor. Among lifestyle variables, smoking and physical activity had a significant relationship with the health status of gum and tooth supporting tissues ( $P < 0.001$ ).

**Conclusions:** Oral hygiene behavioural factors can influence the health of tooth supporting tissues and consequently impact the general oral health status.

### Title:

## Understanding COVID Vaccine Hesitancy via System Dynamics Modeling and Health Belief

Nasim S. Sabounchi, PhD



### Model

The purpose of this presentation is to demonstrate how psychological, socio-economic, and health policy factors influence the COVID vaccine

acceptance and hesitancy in the U.S. through the application of system dynamics (SD) modeling and the health belief model constructs. Building upon these structures and the constructs of health belief model, we have developed a simulation platform which is validated against actual reported perceptions towards COVID-19 vaccine over time. The model variables correspond with the health belief model constructs by using the data trends collected from the CHASING COVID Cohort Study, a national, community-based prospective cohort study of 6,745 U.S. adults. We will use the simulation model to compare scenarios to predict long-term dynamics with the goal of evaluating the effectiveness, sustainability, and unintended consequences of various intervention and policy strategies and identify high-leverage areas that, if implemented, can change COVID-19-related outcomes.



**Thank you to all who attended the 27th Annual Conference during Memorial Day weekend and made it a huge success despite of all the obstacles and uncertainties related to Covid.**



**Also, to those who could not attend, we missed all of you and we hope you can attend our next annual conference, Memorial Day weekend of 2023 in Los Angeles, CA.**





**IAMA 27<sup>TH</sup> ANNUAL  
CONFERENCE  
& GALA  
MAY 2022**





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