

**STATUS OF ORGAN
TRANSPLANTATION IN ARAB
COUNTRIES**

Workshop

**Third GCC Organ Transplantation
and Nephrology Congress**

Wednesday, 18th Jan, 2017

Kuwait

EGYPT EXPERIENCE



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Urology and Nephrology Center

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✿ *Transplantation:*

- ❑ Part of Egyptian philosophy.
- ❑ Great Sphinx is a Symbol.
- ❑ Idea, determination.



(Barsoum and Bakr, Clin Transplants, 2000)



** Transplantation:*

- ❑ Awareness of tolerance importance.
- ❑ Same tissue type.
- ❑ Single monolith.



(Barsoum and Bakr, Clin Transplants, 2000)



✱ *Transplantation:*



(Barsoum and Bakr, Clin Transplants, 2000)



** Transplantation:*

- Cornea** : **1950**
- Kidney** : **1976**
- Bone Marrow** : **1989**
- Liver** : **1991**
- Cardiac valves** : **1991**

(Barsoum and Bakr, Clin Transplants, 2000)



✿ *Transplantation:*

- 1. Cornea**
- 2. Kidney**
- 3. BM**
- 4. Liver**
- 5. Cardiac valves**



Cornea



□ Logistics:

➤ **Special law.**

➤ **Certain regulations.**

(Gamal, 2016)



Cornea



• LOGISTICS:

□ Law 103 in 1962

□ Source of corneas:

➤ DD.

➤ Accident mortalities.

➤ Unidentified deaths.

➤ Execution.

□ Consent.

□ Modification of law 103 in 2003.

(Gamal, 2016)



Cornea



• LOGISTICS:

□ MOH order 654, 1963:

- Regulates the transplantation of corneas in eye banks in hospitals that had license.

(Gamal, 2016)



Cornea



• LOGISTICS:

□ MOH order 417, 1996

- Agreement of department head where patient died.
- Agreement of ophthalmic department head.
- Agreement of hospital director.

(Gamal, 2016)



Cornea



• EYE BANKS:

□ Cairo University:

- Started : 1989
- Waiting patients: 4500
- Waiting donors : 1000

(Gamal, 2016)



Cornea



- **EYE BANKS:**

- **Ain Shams University:**

- **Started 1990.**

- **Stopped 1996.**

(Gamal, 2016)



Cornea



- **EYE BANKS:**

- **National Center:**

- **Started 2010.**
 - **Stopped 2011.**
 - **Receiving imported corneas.**

(Gamal, 2016)



Cornea



• **OUTCOME:**

- ❑ **9000 operations.**

- ❑ **Success rate was more than 70 %.**

- ❑ **Eye banks in Egypt were under the EBI.**

(Gamal, 2016)



✿ *Transplantation:*

1. Cornea
2. **Kidney**
3. BM
4. Liver
5. Cardiac valves



Kidney



Renal transplantation in Egypt

M.A. BAKR

Urology and Nephrology Centre, Mansoura University, Egypt

Feedback of transplant centres in Egypt

Centre	Number of renal transplants		Annual rate
	Adult	Pediatric	
1	145	6	20
2	46	5	25
3	80	2	30
4	121	1	15
5	40	—	20
6	420	6	35
7	35	—	5
8	50	20	2
9	36	1	15
10	160	3	24
11	100	—	20
12	5	—	1
13	517	6	50
14	243	7	30
15	192	10	40
16	260	5	43
17	500	5	30
18	160	3	20
19	219	—	15
20	1,150	71	85
Total	4,476	151	



Kidney



**CLINICAL
TRANSPLANTS
2000**

UCLA
2000

The Egyptian Renal Transplant Experience

Rashad Barsoum ^a and M. Adel Bakr ^b

*^aCairo University and ^bMansoura Urology and Nephrology Center
On behalf of colleagues from 20 Transplant Units in EGYPT*

J. Michael Cecka & Paul I. Terasaki



Kidney



First two transplants in Egypt March, May 1976

REPRINT FROM THE MEDICAL JOURNAL OF CAIRO UNIVERSITY
Vol. 46, No. 2, 1978



Two Renal Homotransplants

The First Report

M.A. GHONEIM, M.Ch., S. EL HAMADY, M.Ch.
A.G. ASHAMALLAH, M.Ch., S.H. SOLIMAN, M.Ch.
M.A. GABALLAH, M.Ch., M.A. BAZID, M.B., B.Ch.
H. EL KABANY, M.B., B.Ch. and S. SHABAN, M.B., B.Ch.

*Department of Urology and the Dialysis Unit,
Mansoura University Hospital*

CAIRO UNIVERSITY PRESS
1978



Kidney



First Transplantation in Egypt



March, 1976
Mansoura



Kidney



RENAL ALLOTRANSPLANTATION.

6 cases

By

M.A. GABALLAH, M.Ch., A. ASHAMALLAH, M.Ch.
M.A. GHONEIM, M.Ch.

From the Department of Urology, Mansoura University
Hospital, Mansoura — Egypt.

Reprint from the Egyptian Journal of Urology

Vol. IV

No. 1

1978

The Third Report

14 cases

16(1), 1980



Kidney



CHAPTER 15

Live-Donor Renal Transplantation at the Urology & Nephrology Center of Mansoura: 1976-1998

Mohamed A. Ghoneim, Mohamed A. Bakr, Nabil Hassan, Ihab Wahba, Ashraf S. Fouda, Mohamed A. Sobh, Ahmed B. Shehab El-Dein, Ahmed A. Shokeir, Mohsen M. El-Mekresh, Bedair Ali-El-Dein, Yasser M. Osman, Amani Moustafa, Farha El-Chenawi

Department of Urology, Division of Nephrology and Division of Clinical Immunology, The Urology & Nephrology Center, Mansoura, Egypt

1200 cases

Clinical Transplants, 2001

Research Article

Factors Affecting Graft Survival among Patients Receiving Kidneys from Live Donors: A Single-Center Experience

2000 cases

BioMed Research International, 2013



Kidney



CTS Collaborative Transplant Study
KIDNEY TRANSPLANTS
1 November 2016

Cairo, ET	688
Mansoura, ET	2701

(CTS, 2016)



Kidney





Kidney



- MOH**
- Law 2010**
- Registry 2012**
- Medical syndicate**
- Supreme committee**



Kidney



□ Total till 1/2012	: 10.308
□ Total in 2012	: 1053
□ Total in 2013	: 999
□ Total in 2014	: 1041
□ Total in 2015	: 1335
□ Total in 2016	: 970
	<hr/>
	15.507

(Registry MOH, 10/2016)

Mansoura - Egypt



✿ *Transplantation:*

1. Cornea
2. Kidney
3. **BM**
4. Liver
5. Cardiac valves



BM



27 years experience

1989 – 2016

10 centers

(Mahmoud, 2016)



BM



	Pop.	Centers	Tx /years	Rate/million
Egypt	90	10	580	6.4
Other countries				More than 30

(Mahmoud, 2016)



BM



- ❑ **Allogenic (70%) and autologous BMT (30%) are performed efficiently in most centers.**
- ❑ **Matched related donor was the only source until 5 years where haploidentical BMT found its way in Egypt.**

(Afifi, 2016)



BM



• **ALLOGENIC BMT:**

- Acute leukemia.
- Aplastic anemias.
- Other hemolytic anemias.
- Chronic myeloid leukemia.
- Myelo-dysplastic syndromes.

(Afifi, 2016)



BM



• **IMPORTANT CHALLENGES:**

❑ Motivation of the donors (stem cell source).

❑ Lack of matched unrelated donor transplants.

❑ Peculiar toxicities (e.g. hepatic).

❑ Socio-economic problems.

(Mahmoud, 2016)



BM



• MORBIDITY & MORTALITY

- ❑ Toxicity from cytoreductive regimens.
- ❑ Veno-occlusive disease (VOD).
- ❑ Graft-Vs host disease.
- ❑ Infections.
- ❑ In Egypt, 2 problems further complicate the situation:
 - Schistosomiasis.
 - Previous infection with HCV, HBV.

(Mahmoud, 2016)



BM



**Schistosomiasis As A Predisposing Factor
To VOD Of The Liver Following Allogeneic BMT.**

- ❑ **The relative risk to develop VOD was calculated to be 17 fold higher compared to normal recipients.**

(Mahmoud, BMT 1996)



BM



• HEPATITIS

- ❑ Pre-transplant HCV, HBV infections are independent risk factors for VOD.
- ❑ In Egypt:
 - Prevalence of HCVAb in general population is : 15-20%.
 - Patients who are PCR positive for HCV : 8%.
 - Patients who are HBVcAb positive : 25%
 - HBsAg carrier rate : 3%.
- ❑ The decision to proceed to transplantation must balance absolute risk of death from VOD against risks from the underlying disease.

(Mahmoud, 2016)



BM



Liver disease is a major cause of mortality following allogeneic bone-marrow transplantation

CONCLUSIONS:

- ❑ The high prevalence of **HCV and HBV** may have contributed to the outcome of hepatic GVHD and VOD.
- ❑ Therefore, **antiviral** therapy should be considered **early** to prevent progression of liver disease.

(Elsayed et al, Europ. J. of Gastroenterology & Hepatology, 2004)



BM



Socio-economic status of the patients plays a major role in success of the HSCT

❑ **Post-transplant follow-up period:**

- **Strict hygienic** conditions at home.
- **Difficult to comply** with post-transplant hygienic rules.
- **The follow up dropout rate** is relatively high (10-20%).

(Mahmoud, 2016)

Mansoura - Egypt



BM



NCI	ALLO	AUTO	TOTAL
YEAR 1997 (May)	36	11	47
YEAR 1998	78	10	88
YEAR 1999	80	26	106
YEAR 2000	86	3	89
YEAR 2001	94	6	100
YEAR 2002	97	23	120
YEAR 2003	103	27	130
YEAR 2004	128	23	151
YEAR 2005	142	19	161
YEAR 2006	131	33	164
YEAR 2007	113	53	166
YEAR 2008	110	47	157
YEAR 2009	124	105	229
YEAR 2010	131	115	246
YEAR 2011	144	72	216
YEAR 2012	165	137	302
YEAR 2013	158	174	332
YEAR 2014	146	184	330
TOTAL	2,066 (2/3)	1,068 (1/3)	3,134

(Mahmoud, 2016)

Mansoura - Egypt



BM



**Cairo University Journal
of Advanced Research**

**Allogeneic hematopoietic stem cell transplantation for
*non-malignant hematological disorders***

**Hossam K. Mahmoud Alaa M. Elhaddad Omar A. Fahmy,
Mohamed A. Samra, Raafat M. Abdelfattah Yasser H. El-Nahass
Gamal M. Fathy Mohamed S. Abdelhady**

2014



BM



• **CONCLUSIONS:**

- Our problems in transplantation are different.**
- New more effective and expensive drugs make it difficult to operate at such a low budget.**
- Socioeconomic factors influence the outcome.**
- Need for expansion of transplantation.**



✿ *Transplantation:*

1. Cornea
2. Kidney
3. BM
4. **Liver**
5. Cardiac valves



Liver



- **First transplant**



- **LDLT, 1991**



- **National liver institute**

(Khalaf et al., Transplantation, 2014)



Liver



□ Liver transplantation:

- Egypt 56%
- KSA 35%
- Jordan 5%

□ More than 70% of LDLT series in Arab world were carried out in Egypt.

(Khalaf et al., Transplantation, 2014)



Liver



Center	First LT	LDLT	DDLT	Total	%
National Liver Institute	1991	205	—	205	9.6%
National Cancer Institute	1992	—	2	2	0.1%
Wadi El-Nile	2001	400	—	400	18.7%
Dar El-Foad	2001	350	—	350	16.4%
Maadi Hospital	2003	131	—	131	6.1%
Cairo University	2004	129	—	129	6%
Al-Mansoura University	2004	267	—	267	12.5%
International Medical Center	2005	170	—	170	7.9%
El-Sahel Hospital	2007	115	—	115	5.4%
Egypt Air	2007	160	—	160	7.5%
Al-Azhar University	2008	25	—	25	1.2%
Ain Shams University	2008	155	—	155	7.2%
Other	—	31	—	31	1.4%
Total		2,138	2	2,140	

(Khalaf et al., Transplantation, 2014)



Liver



- ❑ **Law**
- ❑ **Banning the sale of organs.**
- ❑ **Imposing restrictions on transplanting foreigners.**
- ❑ **Stipulating jail sentences and fines for law violation.**

(Khalaf et al., Transplantation, 2014)



Liver



- ❑ Successful liver LD transplant program .
- ❑ Organ shortage (supply vs demand).
- ❑ No DD program.
- ❑ Collaboration between Arab World to transplant programs.

(Khalaf et al., Transplantation, 2014)



Liver



Years	Approved	Transplants
2012	425	285
2013	385	288
2014	359	304
2015	298	325
2016	499	295
Total	1966	1497

(MOH Registry, 11/2016)



✿ *Transplantation:*

- 1. Cornea**
- 2. Kidney**
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- 4. Liver**
- 5. Cardiac valves**



Cardiac valves



□ Sources:

- **Importation.**
- **Local harvesting:**
 - ✓ **Approvals.**
 - ✓ **Fatwas.**

(Akl, 2016)

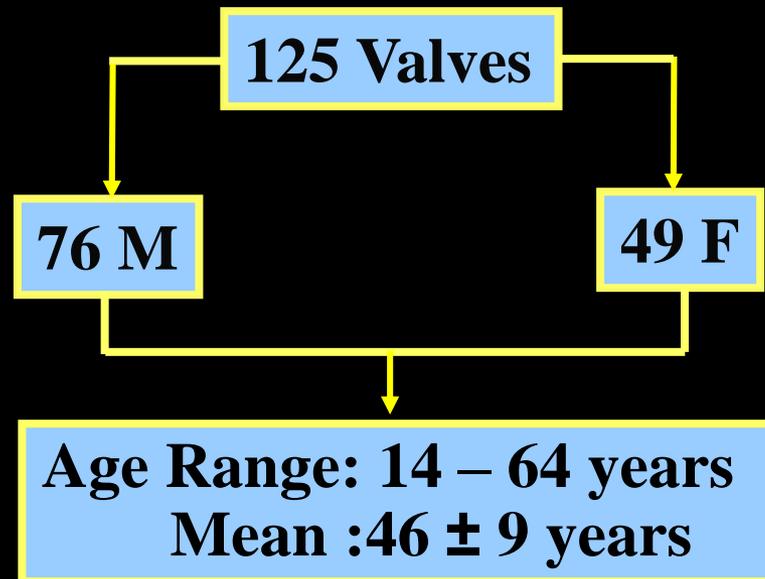


Cardiac valves



Homograft Bank

Between Nov. 1991 – May 1996

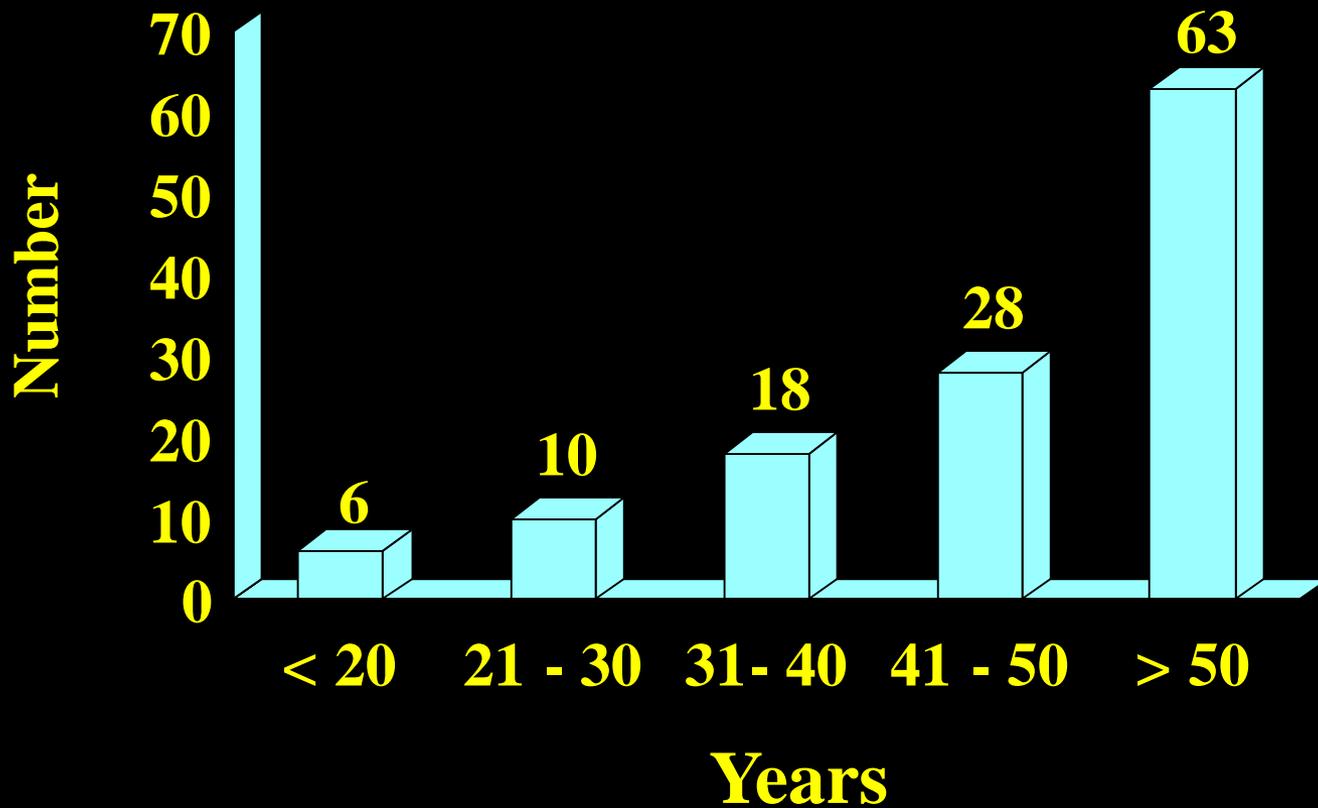


(Akl., 2016)



Cardiac valves

Donor Age distribution

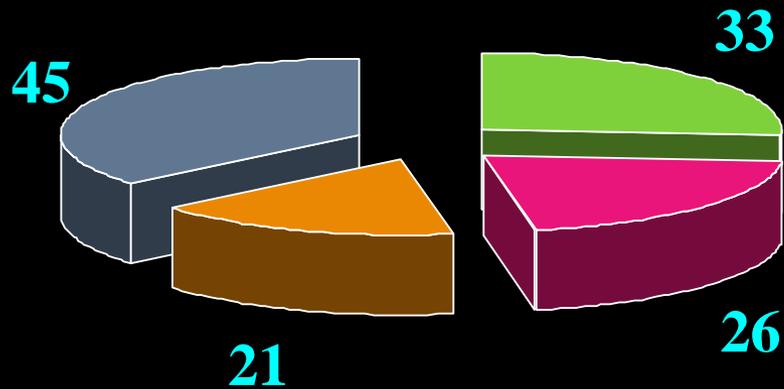


(Akl., 2016)



Cardiac valves

Causes of Death



-  C.V.A
-  C.R.F
-  Liv.C.F
-  Others

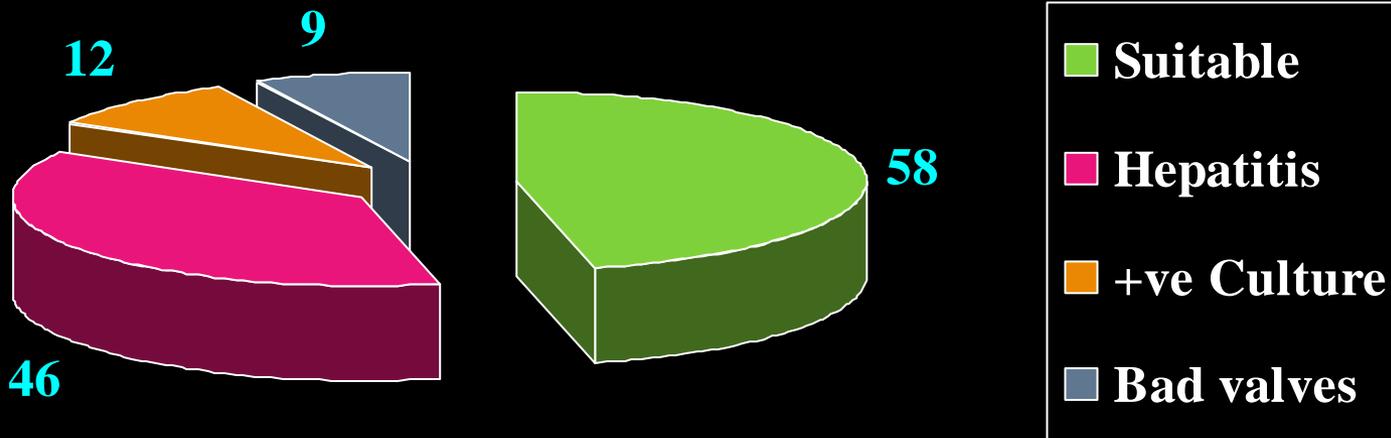
- D.M
- D.C.M
- C.O.P.D
- C.A.D

(Akl., 2016)



Cardiac valves

Fate of Donor Valves



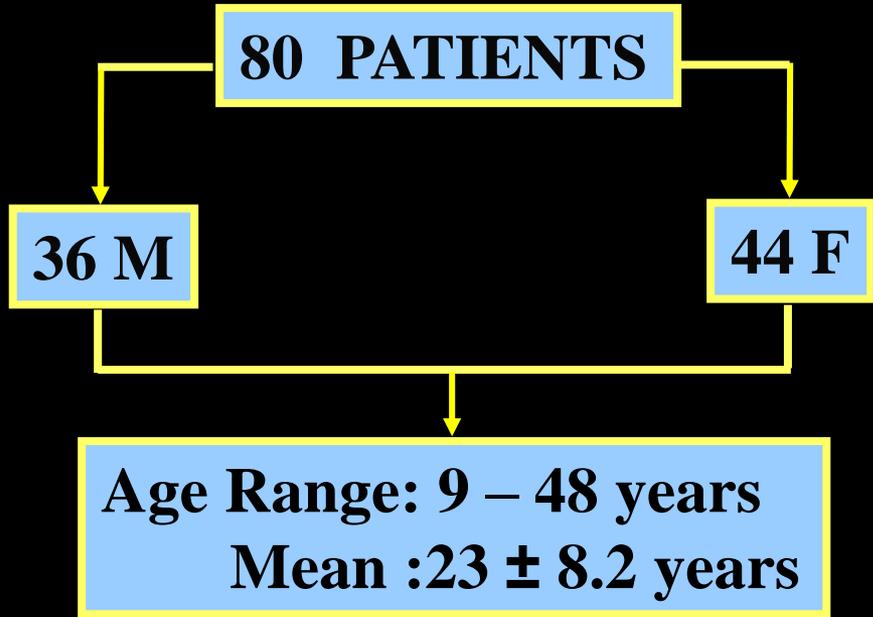
(Akl., 2016)



Cardiac valves

Clinical Results

Between Nov.1991-Oct .2005

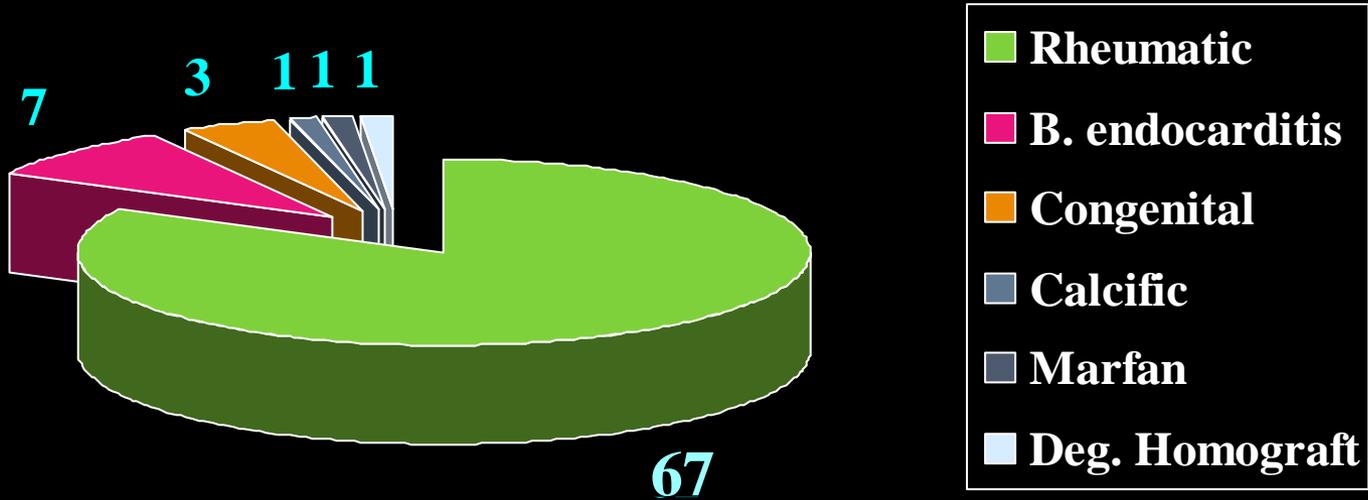


(Akl., 2016)



Cardiac valves

Etiology



(Akl., 2016)



Cardiac valves



Implantation technique

- Subcoronary 60
- Ao.Root 20

Associated procedures

- Mitral repair 28
 - Tricuspid repair 6
 - Aortoplasty 4
 - Myectomy 3
-
- 41

(Akl., 2016)



Cardiac valves



RESULTS

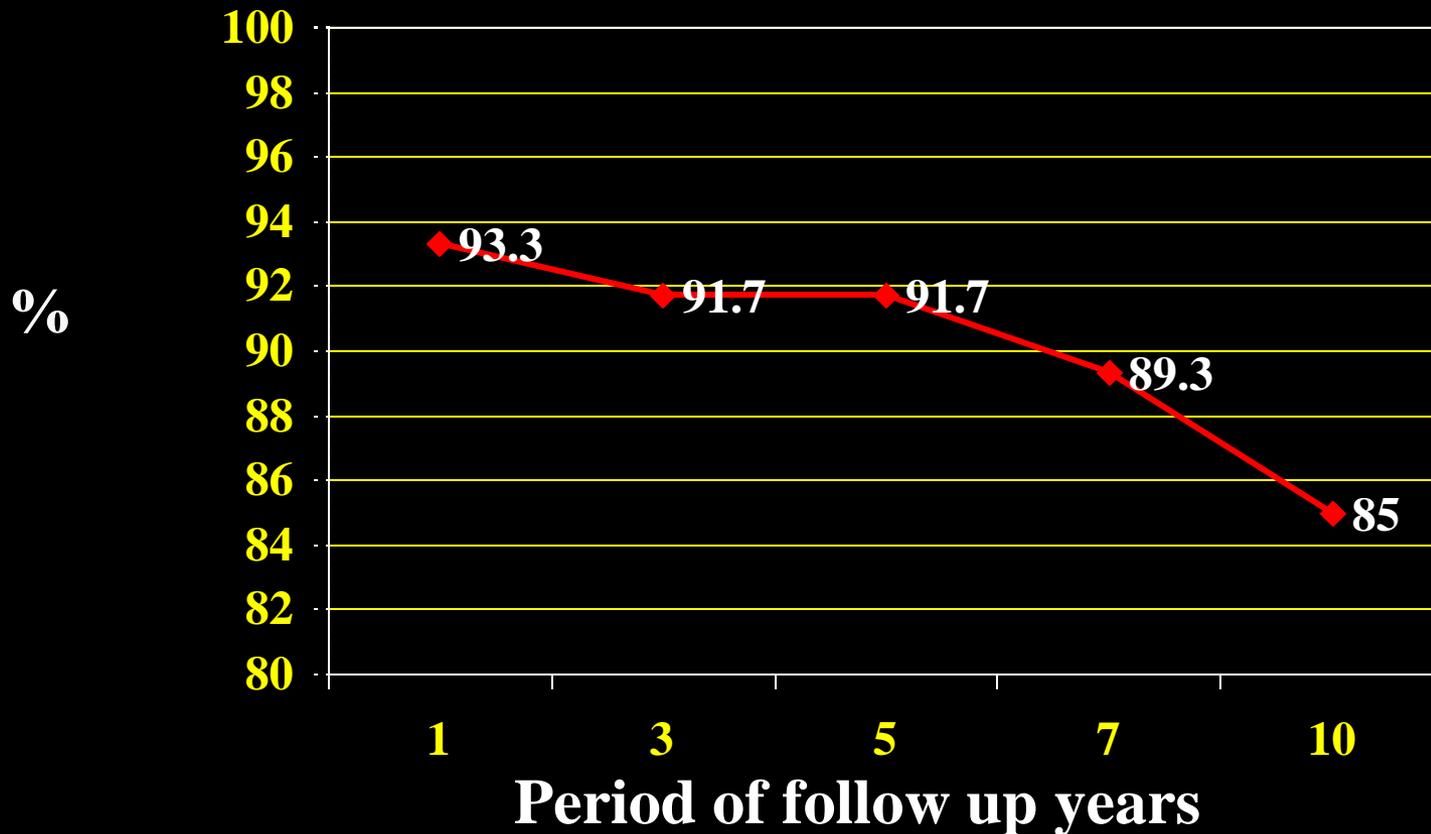
- Technical failure** **0 (0 %)**
- Operative mortality** **1 (1 %)**
- Hospital deaths** **4 (5 %)**
- Late death** **4 (5 %)**

(Akl., 2016)



Cardiac valves

ACTUARIAL SURVIVAL



(Akl., 2016)



Cardiac valves



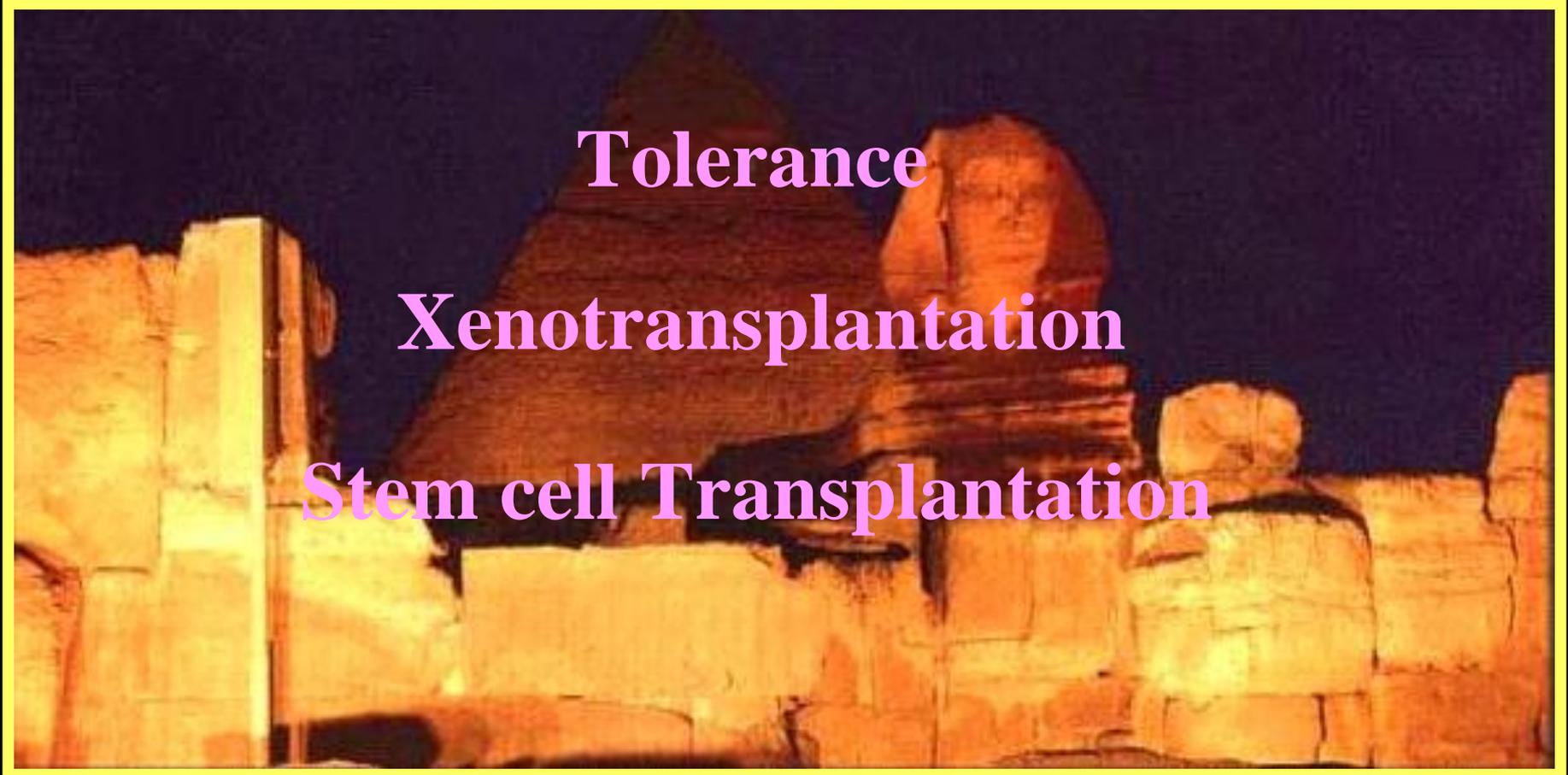
- **CONCLUSION:**

- ❑ Imported valve became very expensive.
- ❑ Problems in local harvesting.
- ❑ Waiting law activation.

(Akl., 2016)



Ambition



Tolerance
Xenotransplantation
Stem cell Transplantation



ACKNOWLEDGMENT

□ Prof. T. Gamal

Cornea



□ Prof. I. Rady

Kidney



□ Prof. H.K Mahmoud

BM



□ Prof. H. Khalefa

Liver



□ Prof. S. Akl

Cardiac valves



THANK YOU