

CHAPTER 7

BONE AND TISSUE TRANSPLANTATION

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7.0 INTRODUCTION

Treating diseased bone is an important issue in Malaysia. Bony defects occur at various parts of the body due to multiple causes and need to be repaired accordingly. Massive allografts are being increasingly used for reconstruction of skeletal defects following tumour resection. Bone granules implantation into tooth extraction socket helps in preserving the height of the alveolar bone. Thus, the need of a Tissue & Bone Bank is becoming obvious as there is advancement in surgical technology in the country.

The National Tissue Bank, School of Medical Sciences, was established in July 1991 at Universiti Sains Malaysia (USM), Health Campus, Kelantan. The university with the co-operation of the Malaysian Institute for Nuclear Technology Research (MINT) and International Atomic Energy Agency (IAEA) has formed a Tissue Bank that is capable of producing tissue grafts for the country. Besides providing deep-frozen bone allografts, the National Tissue Bank also produces freeze-dried bone allografts and amniotic membranes. Amniotic membrane acts as a biological wound dressing in the management of burns, skin laceration and ulcer and corneal ulcer.

The National Tissue Bank produces safe and high quality tissue grafts for clinical use in patients. It conducts screening and tissue processing based on Good Manufacturing Practice principles and was awarded Quality Management System MS ISO 9001:2000 in March 2005.

Besides the National Tissue Bank there are two other bone banks in the country: Bone Bank Hospital Kuala Lumpur (HKL) which was established in 1993 and Bone Bank University Malaya Medical Centre (UMMC) which was established in 2004. Both bone banks supply deep-frozen bone allografts to various hospitals in the country.

This section is on Bone and Tissue allografts supplied by the Tissue and Bone Banks in Malaysia. However data on recipients of bone and tissues is still lacking.

The results shown below reveal that the banks are capable of processing and providing various types of tissue/bone to government and private hospitals throughout the country. These tissue/bone banks have actively embarked on these activities since 1996.

However, it does not reflect the complete scenario on tissue and bone transplantation due to the limited information available. The number of tissue/bone supplied by these banks depends on the availability of tissues procured/obtained and not on their level of participation in providing tissues. Obviously the number of patients requiring tissue and bone transplantation exceeds the number of tissue/bone available.

7.1 STOCK OF BONE AND AMNIOTIC MEMBRANE ALLOGRAFTS

Table 7.1: No. (pieces) of bone and amniotic membrane allografts distributed by National Tissue Bank, USM from 1996-2003

Types of Tissue/Bone	Year							
	1996	1997	1998	1999	2000	2001	2002	2003
Deep-Frozen Allograft -Femur -Femoral head -Humerus -Tibia -Radius -Patella tendon	-	-	15	52	82	55	82	116
Freeze-Dried Bone Allograft -Cancellous Chip -Cortical ring/plate -Cortico-cancellous	-	-	69	74	56	48	42	36
Amniotic membrane -Air-dried -Glycerol preserved	432	300	640	755	1250	800	1132	1020

Table 7.2: The types of tissue/bone allografts supplied by Tissue/Bone Banks in 2004

Types of Tissue/Bone Allograft	Tissue/Bone Bank		
	National Tissue Bank, USM	Bone Bank, HKL	Bone Bank, UMMC
	No. (pieces)	No. (pieces)	No. (pieces)
DF Knee slices	1	0	0
DF Femur	9	0	1
DF Femoral head	50	0	0
DF Humerus	1	0	0
DF Tibia	6	3	0
DF Radius	1	0	0
DF Patella tendon	2	1	0
DF Fibula	2	1	0
FD Cancellous	17	0	0
FD Cortical	2	0	0
FD Cortico-cancellous	10	0	0
FD Cortex	1	0	0
Amniotic membranes	1128	0	0
TOTAL	1230	5	1

DF – Deep-frozen

FD – Freeze-dried

7.2 HOSPITALS WHERE TISSUES ARE UTILISED

Table 7.3: The names of hospitals/other sectors using bone allografts in 2004

	Tissue/Bone Bank		
	National Tissue Bank, USM	Bone Bank, HKL	Bone Bank, UMMC
	No. (pieces)	No. (pieces)	No. (pieces)
MOH			
Hospital Kuala Lumpur	0	4	0
Hospital Pulau Pinang	5	0	0
Hospital Kota Bahru	5	1	0
Hospital Melaka	1	0	0
Hospital Seremban	2	0	0
Hospital Sarawak	4	0	0
Hospital Sultanah Aminah, Johor Bahru	9	0	0
Hospital Alor Star	1	0	0
TOTAL	27	5	0
University			
HUKM	3	0	0
HUSM	39	0	0
UMMC	9	0	1
TOTAL	51	0	1
Private and other sectors			
Hospital Fatimah, Ipoh	1	0	0
Sri Kota Medical Centre, Klang	2	0	0
Zimmer	9	0	0
Stryker	2	0	0
Jasa Dental Surgery, Kuala Lumpur	10	0	0
TOTAL	24	0	0

Table 7.4: The names of hospitals/other sectors using amniotic membranes in 2004

	Tissue/Bone Bank
	National Tissue Bank, USM
	No. (pieces)
MOH	
Hospital Kuala Lumpur	22
Hospital Sarawak, Kuching	6
Hospital Melaka	5
Hospital Tengku Ampuan Rahimah, Klang	4
Hospital Sultanah Aminah, Johor Bahru	73
Hospital Tengku Ampuan Afzan, Kuantan	6
TOTAL	116
University	
HUSM (Pharmacy)	1001
UMMC	5
HUKM	4
TOTAL	1010
Private	
Gleneagles Medical Centre, Penang	2
TOTAL	2

*Only National Tissue Bank, USM supplied the amniotic membrane