بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

BIOLOGICAL PLATING OF COMMINUTED DIAPHYSEAL FRACTURES

Essay
Submitted for the partial fulfillment of
M. Sc. Degree

In
ORTHOPAEDIC SURGERY

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كلية الطب

سنى

محضر

أجتماع لجنة الحكم على الرسالة المقدمة من

الطبيب / [illegible]

توطئة للحصول على درجة الماجستير / ~~الدكتوراة~~

فى [illegible]

يزية : [illegible]

ة : [illegible]

لجامعة بتاريخ / / ١٩ تم تشكيل لجنة الفحص والمناقشة للرسالة

و التالى :ـ

[illegible] عن المشرفين

[illegible] ممتحن داخلى

[illegible] ممتحن خارجى

ل عضو منفردا وكتابة تقارير منفردة لكل منهم إنعقدت اللجنة مجتمعة فى

بتاريخ / / ١٩ بقسم [illegible] مدرج [illegible]

رة وذلك لمناقشة الطالب فى جلسة علنية فى موضوع الرسالة والنتائج التى توصل

التى قام عليها البحث .

[illegible]

نة :ـ

ن ... الممتحن الداخلى الممتحن الخارجى

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Contents

Chapter 1

Anatomy of the Diaphysis:

Long bones are divided into five unequal segments: two joint segment, two metaphyseal and the one shaft or diaphysis.

The shaft (Diaphysis) can be further subdivided into three segments.(Fig1)

(One) Shaft proximal (P)

(Two) Shaft Distal (D)

(Three) Shaft Middle (M)

In both these (a & b) the medullary canal flares out and (C) where the medullary canal remains the same diameter throughout. (Muller et al).

Histological type of diphyseal bones.

In typical long bones the diaphysis consists of a wall of compact bone enclosing a large cylindrical bone marrow cavity.

Compact (cortical) bone (Fig 2,3)

The basic structural unit of compact bone is the Haversian system or the osteons. It consists of lamellae concentrically arranged about the Haversian canal (concentric lamellae) which is 3.9 mm length.

These Haversian canals communicate with the outer surface of the bone or with the medullary cavity through volkmann's canals. Compact bone is made up of large number of Haversian systems between which

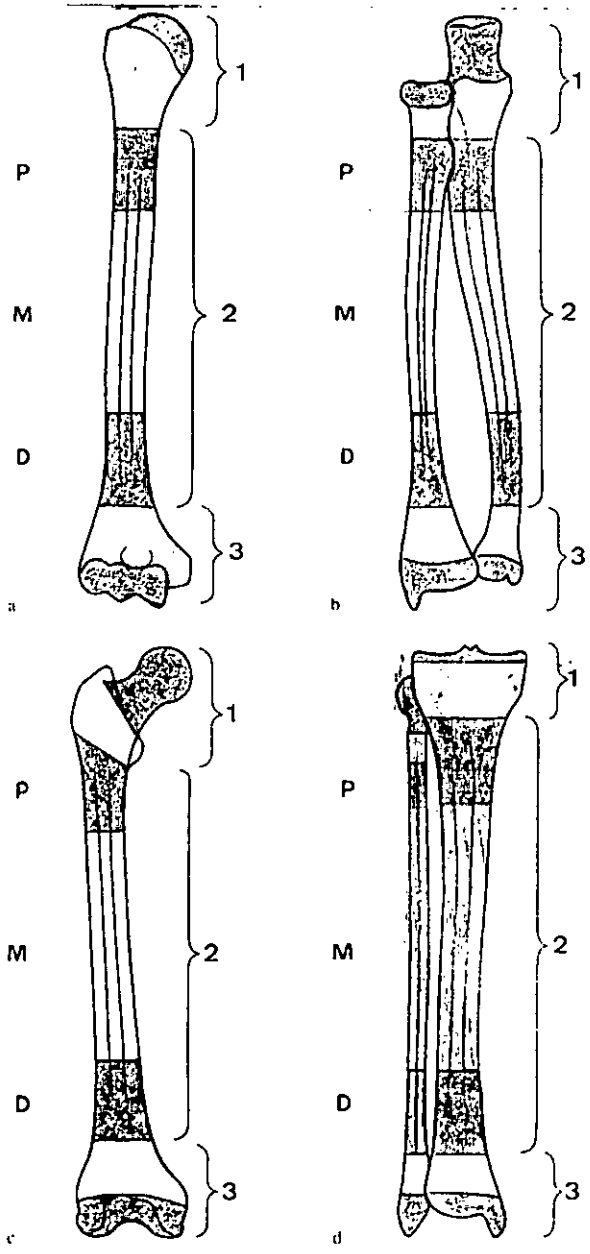

Figure 1: Division of Long Bones Ref

a. Humerus: Proximal humerus (head and tuberosities), humerus shaft, distal humerus (supracondylar and transcondylar)

b. Forearm: Proximal radius (head and subcapital), radius shaft and distal radius (supra-articular and trans-articular). Proximal ulna (Olecranon, coronoid process, sub-articular), shaft of ulna and distal ulna

c. Femus: Proximal femur (head, neck and pertrochjanteric), shaft of femur, distal femur (supracondylar and transcondylar)

d. Leg: Proximal tibia (tibial plateaus and proximal metaphysis), shaft of tibia, distal tibia (supramalleolar, pylon and transmalleolar). Proximal fibula (head and subcapital), shaft of fibula, distal fibula, supramalleolar and transmalleolar).

Figure 2: A transverse section through a portion of a Haversian system of a decalcified human femur to show the character of the compact and diffuse lamella.

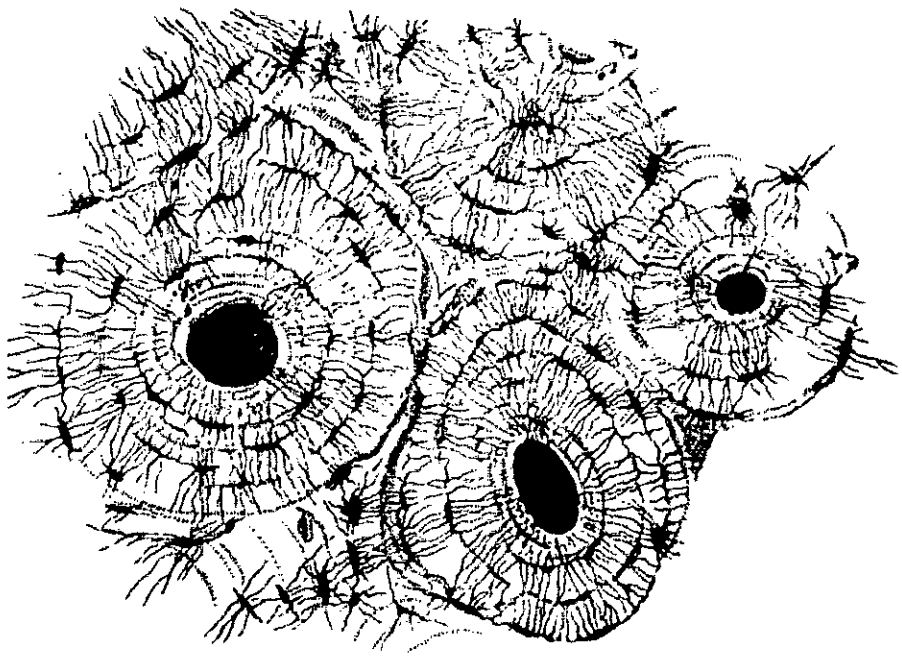

Figure 3: A transverse section through the compact substance of bone (Magnified)

are interstitial or ground lamellae, the osteocytes and lacunae are concentrically arranged in between the lamellae. Most Haversian systems are directed in the long axis of bone. Large number of canaliculi pass radially from the canal to the lacunae and intercommunicate with each other. Their function is supposedly for diffusion of nutrient fluids towards the osteocytes and waste products towards the nutrient vessels.

Components of bone

(A) **Periosteum**

It is the membrane which covers the outer surface of the bone except where it articulates with other bones. It is subdivided into an outer layer which is thin made of irregularly arranged connective tissue containing some fibroblasts and an inner layer known as the cambium layer which is looser in composition and is more vascular and contains osteogenic cells which are flattened, spindle shaped cells. Sharpy's fibers are thick bundles of collagenous fibers that pass from the periosteum into the basic external circumferential lamellae, they fix the periosteum firmly to the surface of the bone particularly where tendons and muscles attach to the bone, where large blood vessels enter the bone and the junction of the epiphysis with the shaft in long bones.

The periosteum and its blood supply have been found to be of great importance for bony union. When the periosteum is stripped away from the bone, it carries with it the osteogenic cells.