

## EVALUATION OF GOLD FOIL AS GUIDED BONE REGENERATION BARRIER ON HEALING OF CALVARIAL OSSEOUS DEFECTS

Ibrahim A. Mohamed\*, and Farouk A. Mohamed\*

### ABSTRACT

The objective of this study was to evaluate gold foil as a guided bone regeneration barrier on healing of calvarial bone defects in adult rabbits. 12 adult rabbits were used in this study the calvarial bone was exposed through a skin flap where two bicortical circular defects (10 mm in diameter) were made with preservation of the dura, the right defect was covered with gold foil while the left defect was covered with collagen membrane. Animals were followed up for three, five and nine weeks and autopsies were taken and sent for histologic evaluation. After nine weeks, bone formed under gold foil showed thin trabeculation while that under collagen showed thick ones. These encouraging results of bone formation, easy handling, simple removal and reasonable price will expand the use of gold foil as a guided bone regeneration barrier. Further investigations of longer duration are recommended to study the amount and character of bone after maturation.

### INTRODUCTION AND REVIEW OF LITERATURE:

The reconstruction of large skeletal deficiencies presents a challenging problem to the orthopedic and surgical community. Such defect in the facial skeleton can be the result of trauma, infection, congenital deficiencies, osteotomy gaps and tumor resection. In the reconstructive process there is often a need to create and promote new bone formation<sup>(1)</sup>.

Many methods have been described to increase the rate of bone formation and to augment bone volume, osteoinduction<sup>(2)</sup>, osteoconduction<sup>(2)</sup>, distraction osteogenesis<sup>(3,4)</sup> and guided bone regeneration<sup>(5,6,7)</sup>.

The concept of guided bone regeneration implies that placement of a barrier membrane pre-

vents ingrowth of soft connective tissue cells into bone defects. The membrane is placed in direct contact with the surrounding bone surfaces, thereby placing the periosteum in outer surface of the membrane, the flap is then repositioned and sutured creating a closed situation and allows osteogenic cells originating from the adjacent bone marrow to regenerate the defects with bone<sup>(8-10)</sup>.

Experimental studies performed on various animal models have proven that the mechanical barrier principle, although different in many respects, is also applicable in osseous reconstructive surgery<sup>(10)</sup>. The principle is used in treatment of bone defects<sup>(11)</sup>, in bone augmentation procedures<sup>(11,12)</sup>, and in connection with implant installment<sup>(5,13-15)</sup>.

There are two types of barrier membranes including resorbable and non-resorbable, each one of

\* Assoc. Professor, Oral Surgery Dept., Faculty of Oral and Dental medicine, Cairo University.