

**The Effect of Pepgen P-15 and Alcipore
on Closure of Cleft Palate in Comparison
with Autogenous Bone Graft
(Experimental Study)**

A Thesis
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by
Nadya Hamood Hussein Al-Saleem
B.D.S.

Supervised by
Prof. Dr. Khalid Yousef Igzeer
B.D.S.(Baghdad)
M.Sc. (London)
F.F.D.R.C.S.1

Abstract

This study focuses on studying the effect of the bone substitute materials(pepgen P-15 and algipore) as a therapeutic materials in closure of surgically produced cleft palate and compare it with cleft treated with autogenous bone graft, and to monitor serum alkaline phosphatase level during the healing process.

Twenty nine experimental rabbits were divided into four groups (A, B,C and D), each one of the first three groups (A, B and C) comprise nine rabbits, while the fourth group(group D)consists from two rabbits reserved as control group without any surgical intervention. Clefts palate defects were produced surgically in the region of premaxillary suture in the left side of the palate of 27 rabbits in (group A, B and C), average dimation of this created defect about 10mm in diameter, 10mm in height and 3mm in depth to remove all bone thickness in this area until reach nasal mucosa upward and posteriorly, then this nasal mucosa excised completely in area of created cleft to create communication between oral cavity and nasal cavity.

Group A rabbits defect, treated with autogenous bone graft from iliac crest and guided tissue regeneration membrane(GTR) (Gore Resolute XT).

Group B rabbits defect, treated with pepgen p-15 and guided tissue regeneration membrane (GTR).

Group C rabbits defect, treated with algipore and guided tissue regeneration membrane (GTR).

Group D (control group) consist from two rabbits without any surgical intervention to investigate the normal level of serum alkaline phosphatase (ALP).

During healing process histological examination done at 1, 2 and 3 months postoperatively. group A and B revealed complete healing and maturation of the newly formed bone by the end of 3 months. Group C revealed incomplete healing of the newly formed bone and many algipore particles was still unresorbed during during the same period of time (3 months).

Monitoring serum alkaline phosphatase (ALP) level done at 2, 6 and 12weeks used as an indicator for bone formation and correlated with histological finding.

Serum alkaline phosphatase (ALP) level in control group was 4.5 KAU/100ml. In(group A) serum ALP level drop down to normal level at 3 months postoperatively indicating complete healing process of newly formed bone.

In (group B), serum ALP level raised to 12.7 KAU/100ml at 6 weeks and drop down to normal level at 3 months postoperatively indicating complete healing process of newly formed bone.

In group C, serum ALP level raised to 11.8 KAU/100ml after 2 weeks and remain high (7.9 KAU/100ml) by the end of 3 months pstoperatively indicating incomplete bone healing process.

The histological findings correlated with serum ALP level indicated that autogenous bone graft and Alloplastic material (pepgen p-15) are the standard material for closure of cleft palate defect. Algipore material is inferior to pepgen p-15 regarding time factor.