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## **Evaluation of thread design of conventional Implant and Indigenous Implant in Implant Retained Auricular Prosthesis-In Vitro Study**

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### **ABSTRACT:**

**Background:** Facial defects can result from trauma, treatment of neoplasm, or congenital malformation. Restoration of facial defects presents a difficult challenge for both the surgeons and the Prosthodontist. The first craniofacial osseointegrated implants was based on the experience of previously placed oral implants combined with data gathered from experimental investigations of skin penetrating implants. Implants used to retain auricular prosthesis were first trained in the year 1979.

**Aims:** The aim of this study was to evaluate the design parameters of auricular implant thread shape, diameter and length on stress distribution in the surrounding temporal bone by Finite Element Analysis.


**Materials and methods:** v-shaped and buttress shaped thread design auricular implants with varying implant length of 3mm, 4mm, 6mm with constant diameter of 3.75mm and also implants with gold casting bar are placed in temporal bone. Stress distribution around the temporal bone is analyzed by finite element analysis.

**Results:** The mean stress values of craniofacial auricular implant with 4mm and 6mm, length and 3.75 diameter in the middle of the implant and end portion of the implant in both V-shape thread design and buttress shape thread design is statistically insignificant, stress distribution on these areas found to be minimum. The mean stress values of craniofacial auricular implant with bar connected together in 3mm, 4mm and 6mm, length and 3.75 diameter in both V-shape thread design and buttress shape thread design is statistically insignificant. The stress distribution found to be better in buttress shaped threaded implants irrespective of the length 4mm and 6mm.

**Conclusion:** In this study shows, from a biochemical stand point, buttress shape thread design in implants allows engagement of a maximal amount of bone, and improved distribution of stress in the surrounding bone. This also allows for the application of higher torque in the placement of prosthetic components.

**KEYWORDS:**

Craniofacial auricular implant, V-shaped thread design, Buttress shaped thread design.

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