

Allogenic implants of the nasal dorsum: clinical and experimental studies in animals

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In rhinoplasty it sometimes becomes necessary to implant allogenic material under the bridge of the nose. According to Hellmich (1974) allogenic refers to material from individuals of the same species. In English literature the term homogenous is often used synonymously.

We followed 26 patients who had received allogenic implants for the purpose of strengthening atrophic nasal dorsum skin, smoothing out small corrugations detectable only on palpation, "rounding off" the dorsum, or for filling out slight saddle formations. Lyodura implants were used in 10 patients, crushed cartilage preserved in merthiolate was implanted in another 8 patients, and yet another 8 patients received combination implants consisting of Lyodura and crushed cartilage; the patients were followed postoperatively for periods ranging from 3 months to 3 years.

Table 1. Results of utilisation of implants.

indication	implanted material		
	lyodura	merthiolate preserved crashed cartilage	lyodura in combination with merthiolate pre- served crashed cartilage
atrophic skin of the bridge of the nose	+		
small corrugations of the bridge of the nose	—	(+)	+
slight saddle formations to "round off" the bridge of the nose	—	(+)	+
	—		+

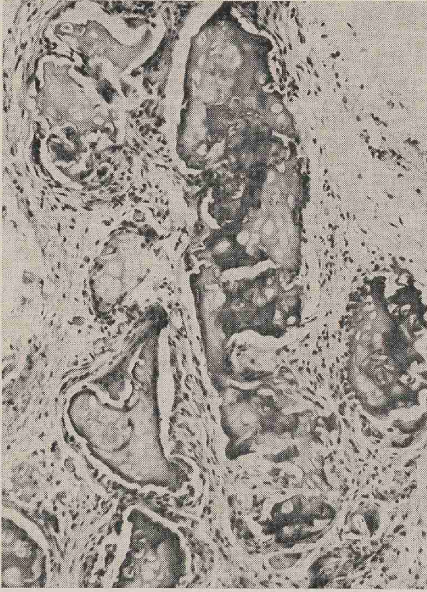


Figure a. Crashed cartilage 6 weeks after implantation. HE, magn. 220 x.



Figure 1 b. Crashed cartilage 6 months after implantation. HE, magn. 220 x.

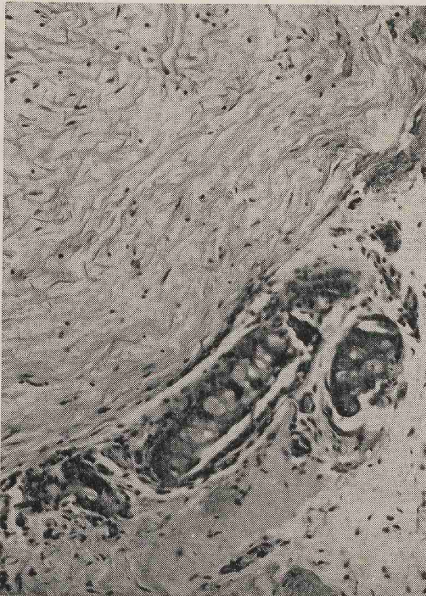


Figure 1 c/d. Crashed cartilage covered with Lyodura (L) 6 months after implantation. HE, magn. 220 x (1 c) / 560 x (1 d)

CLINICAL FINDINGS

Pure Lyodura implants (Table 1) were effective in reinforcing atrophic skin of the nasal dorsum, and in reducing its parchment-like appearance and structure. Allogenic crushed cartilage showed no loss in substance, either upon inspection or palpation; however, in some patients the cartilage had become displaced, causing undesirable small resistances. To avoid such displacement and to improve modulation of the implant, crushed cartilage was covered with Lyodura. This combination produced favorable results, with no incidences of implant displacement or defect recurrence observed. The behavior of the implants were examined in 3 months old Wistar rats weighing 300-350 grams. Rat tracheas were prepared free of connective tissue and placed in a 0,4% merthiolate solution. Crushed trachea was then implanted subcutaneously under the dorsum of the nose. Each group of 20 animals received Lyodura, crushed cartilage or a combination of both.

The histological findings we encountered corresponded to these reported in the literature (Korb et al., 1967; Pia, 1967).

After 6 weeks the Lyodura implant showed fibroblast formation on its edges, and after 3 months fibroblast penetration was noted along the entire fibrous structure. At 6 and 9 months postoperatively the histological findings remained the same except that a thin connective tissue layer had also formed.

Six weeks after implanting crushed cartilage, it was surrounded by highly cellular connective tissue, with numerous macrophags and polynuclear cells present in the immediately surrounding area. Empty cavities were observed in the cartilage, but resorption lacunae were absent, as was any sign of absorption. Three months later the connective tissue was more fibrous and less cellular, macrophags had decreased, and fibrocytes predominated. Six and 9 months postoperatively there was further development of fibrous tissue, but still no sign of absorption was observed.

When crushed cartilage and Lyodura were implanted together the morphological changes were the same as observed when these materials were implanted separately (Figure 1).

CONCLUSION

The results show that Lyodura effectively reinforced atrophied skin of the nasal dorsum, but after 3 months the supporting filling effect was no longer observable. Crushed cartilage increased mass in nasal dorsum defects but sometimes became postoperatively displaced. Lyodura effectively held crushed cartilage in place until scar tissue had formed. The filling effect produced by the combined implant procedure is good. Due to lack of, or very slow, absorption there is no loss of implant substance. Although we saw no signs of absorption, a detailed discussion of the problem is not within the scope of this article. How-

ever Limberg (1961) did not observe signs of absorption in 1-2 mm³ diced cartilage and Haas (1977), after an intensive study of the literature, concluded that small cartilage pieces were unsuitable for subcutaneous reconstruction. We found that the implantation of crushed cartilage produces a large enough mass of scar tissue for satisfactory correction of minor profile irregularities. In our opinion, and in the opinion of Farrior (1966), it is unimportant whether the cartilage within the scar tissue is absorbed or not, because the compensating connective tissue will have the same filling effect.

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