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TRANSPLANTATION OF OS PURUM AND BONE CHIPS IN THE SURGICAL TREATMENT OF PERIODONTAL DISEASE

(PRELIMINARY REPORT)

by

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The radical operations in periodontal disease include surgical measures on the gingiva as well as levelling by means of osteotomy of any alveolar bone pockets. Among the methods that have been described in the literature and actually carried out, the most important are: curettage of the pockets (*Younger; Sachs*), gingivectomy (*Hubman*), radical gingivectomy (*Müller; Hulin*) and even more radical surgical procedures (*Widman; Neumann*), the choice of method depending on the severity of the periodontal disease.

PRINCIPLES

The ideal must be to replace by surgery the bone that has been lost round the teeth and not to increase the destruction already caused by the disease.

The principle underlying bone transplantation of this kind is that the proliferating tissue in the implant bed grows into the bone canals of the implant and develops new bony tissue, in particularly ample amounts in the spaces between the implant and the compact bone of the bed and the periosteum (*S. Orell*). This also happens, according to *J. Hertz*, in the ends of bone fragments in the ordinary healing of fractures, where one is not concerned with implanted bone. This healing may occur by indirect substitution of living bone, and by direct substitution in the case of necrotic bone.

A bone material, *os purum* (Pharmacía), was formerly used in bone transplantation of various kinds. *Os purum* (pure bone) usually consists of ox bone that has been cleaned and relieved of fat, connective tissue and proteins by a complicated physico-chemical procedure, so that the Haversian canals become clean and open, and only calcium and cementing materials remain.

Os purum is supplied in various forms, such as cones, balls, lamellae and bands, but also as a ground material of various grades of fineness. In the surgical treatment of periodontal disease with destruction of the bone, the author has used the latter type.

For practical experimental reasons it has not yet been considered advisable to apply the method in cases where a more general marginal bone destruction has taken place.

It should be emphasized that, before carrying out the surgical procedure, a meticulous examination of the patient has been undertaken in order to reveal as far as possible the pathogenic factors underlying the condition. Any treatment required as a result of this examination was undertaken. X-ray control was carried out, stereo-roentgen pictures being taken in each case, pre-operatively as well as post-operatively. The patients reported for control examination every two weeks. At these control examinations a point was made of ensuring as far as possible that the apparatus was adjusted in exactly the same position for viewing and comparing the X-ray pictures taken at the various control examinations and to be able to carry out exact measurements according to the technique devised by N. Berghagen & P. Hjelmström.

TECHNIQUE

Operations were performed as follows: After incision along the gingival margin and vertically, a flap was bent back. All granulation tissue was carefully scraped away from the pockets in the bone. No bone was removed. After rinsing of the wound, *os purum* (sterile) was deposited in the pockets concerned. Ground implant was packed as tightly as possible up to just over the bone margin. Then followed suturing, in which the greatest importance was attached to bringing the edges together as closely and tightly as possible. For this reason suturing was done, not

only between the teeth, but with additional sutures round each tooth. On completion of the operation, a transparent fixation-splint of a special type was applied, which allowed inspection without a change of dressing; this splint was made before the surgical procedure was carried out.

The method described has recently been modified so that instead of *os purum* the author has used bone from the patient, taken from the iliac crest, in the form of bone chips. After the removal of such a small piece of bone it was transferred to a mortar specially designed for the purpose, where it was ground, and then immediately applied in the pockets concerned.

At the time of writing eleven cases have been treated according to the method described, and the results were as listed in the table below.

The following designations were used to classify the results:

- *: Not satisfactory: no clinical or roentgenological improvement.
- ** : Satisfactory: clinical and roentgenological improvement in the form of decreased mobility; some apposition of bone; distinct formation of compact bone on the alveolar septum.
- ***: Excellent: decrease of mobility to normal; complete filling of the former defect with bony tissue; normal structure of the bone found roentgenographically.

Results of operations carried out with os purum

♂	♀	Age	Area of operation	Follow-up period	Results
	+	45 years	+2+3	1 year	**
	+	52 years	5-4-	1 year	**
	+	40 years	+6+7	1 year	*
	+	54 years	-1	5 months	***
+		38 years	6-	5 months	**
+		34 years	1-	5 months	*
	+	39 years	1+	4 months	*
+		40 years	1+	4 months	**
	+	35 years	3-	2 months	**
+		46 years	5-4-	2 months	**
+		43 years	3+; +4+5	1 year	**

In one of the eleven cases the result was "excellent". Seven cases (64 per cent) showed satisfactory results, and in three only the results were not satisfactory.

As all the experiments took place fairly recently, the follow-up period must still be considered too short to allow final conclusions to be drawn as to the lasting results. Moreover, the reservation must be made that the method as applied at the present time may not be the form ultimately decided upon.

Experiments continue to be carried out, and reports on a larger series with evaluations over a longer follow-up period will be published later.

REFERENCES

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