EDITORIAL : VAN DIE REDAKSIE

MASTOID OSTEOPLASTY

The development of brilliantly conceived new techniques for restoring hearing, i.e. fenestrations (Lempert[1]), stapes mobilizations (Rosen[4]), and tympanoplasties (Wullstein[2]) has stimulated a great revival of interest in the problems associated with disorders of the middle ear. Aural surgeons are living in an exciting era of development in reconstructive surgery. Intense interest is also being shown by the public who have become aware of the potentialities of the new developments through the influence of the press and popular magazines.

It is fitting that at this stage another new reconstructive aural procedure be described which may finally overcome the last remaining major problem encountered in diseases of the middle ear, i.e. the problem of the mastoid cavity. This has taxed the ingenuity of aural surgeons and defied solution since the classic mastoid operation for chronic middle-ear disease was first described by Stacke in 1893.[3] The mastoid cavity is formed by exenterating the bone to convert the complicated middle ear spaces and the external auditory canal into one large common cavity.

The object of the technique described by Stacke was to eradicate all diseased tissue in the mastoid bone and middle-ear spaces and so prevent extension to the more vital adjacent structures, e.g. the brain, the facial nerve, and the inner ear which contains the balancing and auditory nerve end-organs. Simultaneously it was hoped that the purulent and often offensive discharge from the ear would cease.

Otologists soon realized that this technique gave excellent direct access to structures within the middle ear. The formation of the cavity became the basic step in operations to gain access to the lateral semicircular canal, either to destroy the membranous canal within it (labyrinthotomy for Ménierè's disease), or to expose the membranous canal by creating a controlled fenestra and so restore the hearing (fenestration operation for otosclerotic deafness—Lempert).

In more recent years (1956) Wullstein described the tympanoplastic technique to restore hearing lost due to the disorganization of middle-ear structures by active or past disease. Here, too, the basic step is exenteration of mastoid bone to gain access to these structures.

It is unfortunate that in many cases formation of the mastoid cavity—an integral step in these operations—created major problems of its own. Examples of these problems are the following: Failure of the cavity to heal, large cavities, and stenosed cavities cause a cosmetic and hearing disability. The ear constantly discharges purulent or bloodstained material and the canal has to be plugged with an unsightly wad of cotton wool. In many instances patients with poor hearing who require an aid cannot wear the air conduction type of aid with an insert into the meatal opening of the ear. Finally, inadequate postoperative supervision may lead to such extensive stenosis of the cavity that a second operation to reopen it becomes necessary.

Numerous attempts were made to solve the problem, e.g. methods were used which would facilitate rapid healing of the cavities; free skin grafts, either Thiersch or Woolf, were used as primary or secondary grafts; skin flaps were transposed to line the cavity; temporal muscle was used as a flap; and mastoid bone chips and diced cartilage were used to fill in large cells exposed in the cavity.

Attempts were also made to develop techniques which obviate the necessity to form a mastoid cavity but still serve the same purpose as the operation described. Thus the "atticotomy" operation was devised by Tumarkin. By removing the bone of the attic area only he avoided constructing a large cavity. Wullstein's school attempts to remove as little bone as possible when doing tympanoplasties.

Unfortunately this does not solve the problem. Wherever the disease is extensive and the bone cellular, the formation of a large cavity is unavoidable. It is also unavoidable when carrying out the fenestration operation. In this issue of the *Journal* a method is described which allows the surgeon to remove as much bone as is essential without having to worry about the size of the cavity formed. After the mastoid operation and after fenestration or tympanoplasty, autogenous cancellous bone grafts taken from the iliac crest are introduced into the remaining cavity. In this way the cavity is completely obliterated, the contour of the external auditory canal is restored, and the canal is provided with a healthy skin lining by the construction of specific skin flaps.

1. Lempert, J. (1938): Arch. Otolaryng. (Chicago), **28**, 42.
2. Wullstein, H. (1956): Wiss. Zeitschr. der Martin Luther Universität Halle/Wittenburg, **5**, 987.
3. Stacke, L. (1893): Arch. Ohrenheilk., **35**, 145.
4. Rosen, S. (1956): J. Amer. Med. Assoc., **161** 595.

AUTOGENOUS BONE GRAFTS

It is generally believed that Duhamel[1] in 1739 made the first scientific approach to the problem of osteogenesis. His work was reported in 1742. He placed silver wires subperiosteally and found, weeks later, that they were covered by bone. He believed that this new bone was produced by the osteogenic property of the periosteum. Ollier,[2] starting in 1858, carried out many experiments and from these he concluded that transplanted bone and periosteum remained alive and, under proper conditions, became osteogenic. The battle of the role of the periosteum in osteogenesis and the fate of transplanted bone raged throughout the latter half of the nineteenth century and into the twentieth century. The opposing schools maintained that the periosteum is not essential because the bone-graft survives only as a scaffold and is merely osteoconducive and not osteogenic.

During the past three decades bone-grafting in orthopaedic surgery has become a universally accepted practice, and many surgeons and experimentalists have reported large series of cases using homogenous bone, cadaveric bone, and autogenous bone (Wilson,[3] Lloyd-Roberts,[4]

Peer,[5] Converse and Campbell[6]). It is agreed that the use of cadaveric bone is not satisfactory. Homogenous bone is not as safe as autogenous bone and the rate of union is slower in some cases. In the main the vast majority of orthopaedic surgeons have employed massive cortical grafts. Cortical bone consists of a mass of densely calcified tissue containing tortuous Haversian systems with a few bone cells at their inaccessible distal ends. For mechanical reasons, therefore, very few living bone cells in the transplant can be expected to survive, since the dense bone precludes the establishment of early nutrition. Under these conditions a transplant of cortical bone may be expected to die, and later it is replaced from those few islands which have managed to survive or, alternately, by the ingress of live bone cells from the living bone with which it is in contact.

Mowlem[7,8] first focussed attention on the use of autogenous chip grafts in the closure of bone defects in the jaw and elsewhere. His valuable contributions indicate that cancellous bone grafts can survive if placed in a vascular bed. It may be assumed that with a cancellous transplant a much greater proportion of the bone cells find nutrition from serum and tissue fluids until the capillaries invade the spongy bone. The rapidity of the new cortex formation and the very high tolerance to infection of the grafts, compared with the usual cortical grafts from the tibia, point to early vascularization of the graft followed by cellular activity of the transplant. Neither radiologically nor histologically is there any apparent difference between the adherent or non-adherent graft, so that the question of absorption followed by reconstitution from existing bone cannot arise.

Mowlem's work has led to the modern treatment of non-union in long bones with autogenous cancellous strips obtained from the iliac crest. This type of bone grafting results in more rapid union and there is no sequestration of the grafts in the presence of mild infection. In this issue of the *Journal* an article is published in which Schiller and Singer describe an operation in which they utilize these principles to combat the numerous disadvantages associated with a residual mastoid cavity after the operations of fenestration, tympanoplasty types 2 - 5, and modified and radical mastoid operations.

In a combined synchronous operation called mastoid osteoplasty, cancellous strips of bone are used to obliterate the mastoid cavity after preparing a vascular bed. The early results are encouraging and radiologically integration of the grafts appears to have occurred after three months. The ultimate fate of the graft is not known at present, but the rapid healing with minimal dressings and the relatively normal appearance of the external auditory canal are distinct advances. It is hoped that the authors will publish a further follow-up of their cases at a later date.

1. Duhamel, H. L. (1742): Mém. Acad. roy. Sci. (Paris), **55**, 354.
2. Ollier, L. (1858): C.R. Soc. Biol. (Paris), **5**, 145.
3. Wilson, P. D. (1951): J. Bone Jt Surg., **33-A**, 307.
4. Lloyd-Roberts, G. C. (1952): *Ibid.*, **34-B**, 428.
5. Peer, L. A. (1951): Brit. J. Plast. Surg., **3**, 233.
6. Converse, J. M. and Campbell, R. M. (1950): Plast. Reconstr. Surg., **5**, 258.
7. Mowlem, A. R. (1944): Lancet, **2**, 746.
8. *Idem* (1945): Proc. Roy. Soc. Med., **38**, 171.

ONRUSTIGHEID EN ONSEKERHEID IN DIE MEDIESE PROFESSIE

Ons leef in 'n tyd waarin daar op baie gebiede van die lewe 'n gevoel van onrustigheid en onsekerheid is. Hierdie gevoel van onrustigheid en onsekerheid is nie net in ons eie land waar te neem in die politieke en maatskaplike en finansiële lewe nie, maar dit is ook aanwesig in baie ander lande—waar dit sowel op die nasionale as die internasionale vlakke tot uiting kom. Vaste waardes en gebruike is aan die verander en aan die kantel. Gevestigde opvattinge word gewysig, en die hele milieu van ons geestelike en praktiese bestaan het meer ‚vloeibaar' geword.

In hierdie golf van onrustigheid wat oor die wêreld trek, is die mediese professie en die mediese praktyk ook betrek. Dit sou dus goed wees om op hierdie stadium vir onsself die vraag te stel: Wat is die faktore wat aan die grond lê van hierdie veranderende omstandighede sover dit die beoefening van die geneeskunde aangaan, en waar staan ons as 'n professie ten opsigte van die basiese waardes?

Een van die ingrypende en diepdringende veranderinge op die gebied van die beoefening van die medisyne, is die feit dat die basiese patroon van geneeskundige dienste heeltemal verander het. Soos ons almal weet is die gesinsdokter—soos hy bekend was aan vroeëre geslagte—aan die verdwyn. Mediese dienste word al meer gelewer teen die agtergrond van spanne dokters in klinieke en hospitale, en op die grondslag van hulp- en versekeringskemas. Aangesien die mediese kennis en die meegaande tegnieke so geweldig uitgebrei het, en aangesien die lewenskoste in die algemeen (en dus ook van mediese dienste) 'n steeds stygende kurwe vertoon, is die veranderende patroon van mediese dienste eintlik onvermydelik.

Vir die individuele dokter, soos vir die individuele pasiënt, skep dit egter besondere probleme. 'n Sekere mate van sekuriteit, wat die dokter betref, wat gegrond was op sy persoonlike verhouding teenoor die mense wat hy bedien, moet verdwyn. En die pasiënt moet hom skik na die anonimiteit van groot organisasies.

Ook op 'n ander vlak het die patroon van mediese dienste radikale veranderinge ondergaan. Ons dink hier byvoorbeeld aan die opkoms van die ‚spesialisme'. Weer moet ons sê dat dit moeilik te bedink is hoe die stelsel verander kan word. Tog word die mededingende faset van die mediese praktyk hierdeur skerp beklemtoon, veral as ons dit in ag neem dat nagenoeg een kwart van al die geneeshere in ons land spesialiste is en dat daar soms veertig of meer spesialiste *in dieselfde vakgebied* in dieselfde betreklik beperkte omgewing praktiseer. Onrustigheid en onsekerheid spruit vir baie dokters uit dié stelsel voort en hulle kom gedurig te staan voor die dilemma van te moet kies tussen die bevrediging van verdere studies en die noodsaak van 'n gevestigde praktyk.

Ons het alreeds indirek verwys na die stygende koste van mediese dienste. Orals oor die wêreld en op alle gebiede is daar 'n groot styging van die basiese lewenskoste. Hierdie faktor, tesame met die kwantitatiewe en kwalitatiewe toename in die aantal en doeltreffendheid van mediese apparaat en middels, het daartoe gelei dat die gewone man geen ander keuse het nie as om aan die een of ander soort hulpfonds of versekeringskema te behoort. Hierdie omstandigheid, wat *ook* onvermydelik is, dra ook sy deel by tot die gevoel van onrustigheid en onsekerheid, aangesien daar

altyd die bedreiging van onpersoonlike sosialisasie van mediese dienste is, of die onderworpenheid van dokters en pasiënte aan die didaktuur van fondse en reëls.

Onder al hierdie omstandighede het die status van die mediese professie baie in die gedrang gekom. Dit is dus noodsaaklik dat ons as 'n professie by herhaling en vernuwing ons eie uitganspunte en waardes moet hersien. Dit is goed om te weet dat die ideaal van diens nog so sterk aanwesig is by so baie dokters. Dit is ook goed om te weet dat die lede van die mediese professie, individueel en gesamentlik, meer werk in ere- en niebetaalde hoedanighede doen as die lede van baie ander professies. Aan die anderkant moet ons egter nie ons oë sluit vir die gedurige bedreigings van oorkommersialisasie van die beroep en van meganisasie en onpersoonlikheid in ons menslike verhoudinge nie.

Die mediese professie moet dus die uitdaging van die veranderende omstandighede en waardes in 'n veranderende wêreld aanvaar en op so 'n manier verwerk dat sy status as 'n vereniging van geleerdes en van professionele persone wat 'n spesiale diens het om te lewer, onaangetas bly.