

Management of Tempromandibular Joint Ankylosis by Gap Arthroplasty

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Introduction

ANKYLOSIS of tempromandibular joints cause serious disabilities. The patient, who is usually a child, not only suffers from malnutrition, oral sepsis and dental caries, but also develops progressive asymmetry of the face, malocclusion of teeth and defective growth of both mandible and maxilla. (Fig. 1)



Fig. 1—Shows facial asymmetry in T.M. joint ankylosis.

The disability usually starts in the post-natal period following trauma to the chin with resultant damage to the mandibular condyle and its articular surface. The ankylosis is unilateral in most cases and leads to gross deformity of the condylar head and its fusion to the glenoid by a massive block of bone.

Management of tempromandibular joint ankylosis pose a difficult problem for the surgeon. The number of operations which have been tried in the past and the varied successes which have been claimed by their authors prove only one thing that we have yet to find the correct answer to this problem.

Diagnosis :

It is important to diagnose whether the ankylosis is unilateral or bilateral and if unilateral—the side affected. In most cases the diagnosis is obvious. The chin deviates towards the affected side due to under-development of the mandible. In unilateral ankylosis, slight movement may be felt on

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palpation of the normal joint, but in bilateral ankylosis, which is rather uncommon, no motion or protrusion of the joint is possible. Radiographs are often difficult to interpret because of superimposition of shadows and tomographs are often valuable. When the ankylosis is fibrous, a clear joint outline should be visible on both sides.

Management :

When there is bony ankylosis, the management is essentially surgical. Forcing the jaws open by dilators result only in maxillary protrusion and anterior openbite. Extraction of teeth for the purpose of feeding does not solve the problem of mastication.

Opinion differs as to the proper age for surgery. It has been suggested that operation at an early age is likely to interfere with subsequent growth of the mandible. But it should be realised that the initial trauma always damages the centre of growth in the condyle. Delaying operation to a later age only serves to produce permanent deformity and malocclusion which are difficult to correct by surgery—later on.

Incision

Two types of incisions are in common use—one in front of the tragus (Kazanjian 1938; Parker 1948) and the other below the angle of the jaw (Risdon 1934). The sub-mandibular incision gives a wider approach and avoids all danger to the facial nerve. We however prefer to use the preauricular approach which leaves an invisible scar. The approach is closer to the area of ankylosis, the field of vision is quite adequate for excision of a block of bone and the danger to

the facial nerve is really insignificant.

Operation :

In most cases, the bony anatomy of the condylar region is grossly altered and it is not possible to carry out a simple condylectomy. The operation invariably amounts to excision of a bony block which includes the condyle, coronoid and part of the adjoining ramus. Osteotomy of the body, angle or ramus of the mandible is hardly practised by any one these days. Most surgeons advise resection of a block of bone, though opinion differs as to the amount of bone which should be excised. Minimal excision is bound to result in reankylosis unless some tissues such as dermis, fascia or muscle is interposed or a block of cartilage or silastic is implanted.

We prefer to carry out wide excision of bone with the help of dental drills, chisel, gougs and osteotome, so as to create a rectangular gap throughout the anteroposterior width and medio-lateral depth of the bone, immediately below the zygomatic arch. We make sure that the mouth is not forced open by fracturing the bony block in its most anterior part, but an actual gap of sufficient dimension is created by removal of bone, with care to avoid the internal maxillary vein. Bleeding is never a problem unless this vessel is injured. We have stopped interposing any soft tissue or cartilage but prefer to fill up the cavity with an absorbable spongostan pack.

Post-operative care :

After excision of a block of bone, there is no difficulty in freely opening the jaw on

the operation table. After the wounds are sutured, dental impressions are taken and then the jaws are temporarily strapped together with elastoplast. After about a week, when the post-operative oedema of face have subsided, a bite-block of acrylic, with a training flange, is fitted to the teeth in the lower jaw and active jaw exercises commenced. Patient is taught, not only to widely open the mouth, but also to close the jaws properly, avoiding deviation and anterior openbite.

Case Reports

Case, 1

Female child, aged 6 years, who came to us in 1967 with bony ankylosis of T.M. Joint (Lt) could only swallow liquids through the gap behind her molars. There was gross facial asymmetry with deviation of the chin towards the affected side and scars of local heat treatment carried out in the village. (fig. 2) Excision of a block of bone was

carried out to produce a gap-arthroplasty without interposition of any tissues or implants. The result was extremely good. There was no recurrence of ankylosis when she was reviewed 2 years later. (fig. 3)

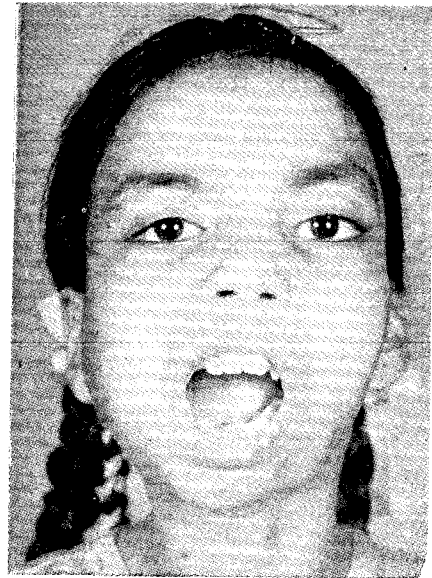


Fig. 3—Post-operative photograph with mouth wide-open.



Fig. 2—Post-operative appearance with mouth fully open (side view). Scars of heat treatment are visible.



Fig. 4—Pre-operative photograph in T.M. joint ankylosis (Rt)



Fig 5—Post-operative appearance with mouth open.



Fig. 6—Pre-operative appearance showing the space between upper & lower incisors produced by dilators



Fig 7—Post-operative appearance with mouth wide-open



Fig 8—Xray showing the gap after excision of bony-block

Case. 2

Female child, age 7 years, came with a similar problem. The ankylosis was unilateral on the right side. Treatment was carried out on similar lines-with very satisfactory results. The operation scar was hardly visible. Seen after 1 year-she could still open her mouth wide (figs. 4&5) Dental occlusion was good and there was no openbite deformity.

Case. 3

Female child, aged 8 years, came with ankylosis of T.M. joint (Lt). She had a protruding premaxilla due to prolonged use of dilators (fig. 6). She could take fluids through the gap between her incisors but no mastication was possible. We carried out gap-arthroplasty on the affected side through a preauricular incision and provided her with a biteblock and training flange. The result again proved quite satisfactory. There was no difficulty in opening the mouth, no deviation of jaw nor any anterior openbite. (fig. 7)

Discussion

Six cases (of tempromandibular ankylosis) have been treated by us during the last 4 years. In all these cases, the ankylosis was unilateral. Gap arthroplasty was carried out in every case without interposition of any soft tissues, cartilage or silastic implants. Early postoperative jaw exercise and provision of a acrylic bite block with training flange gave satisfactory results in every case. (fig. 8)

The preauricular approach was used

routinely in every case without any injury to facial nerve. This enabled us to exercise a rectangular block of bone immediately below the zygomatic arch. We feel if resection is carried out at a lower level, gap arthroplasty is likely to fail as the posterior cut ends of the ramus are likely to come in contact (when the mouth is open) and are liable to fuse. We take special care to remove sufficient bone from the region of the coronoid in the most anterior part of the bony block. This obviates all chances of subsequent bony fusion as is likely to occur when this part is forcibly fractured during operation by mouth gage.

When a bite-block and training flange is used, there is no chance of deviation of jaw and open bites, in unilateral ankylosis. Implants of cartilage or silastic are necessary only in bilateral excisions.

Recurrence of ankylosis usually occur within the first 6 months after operation. Even in cases, where a sufficient gap has been created, haematoma and infection may ruin all chances of success. One must resist temptation of doing condylectomy on the healthy side for recurrence of ankylosis which result from insufficient excision of bone, haematoma, infection or lack of post-operative care.

There is no harm in excising sufficient bone from the region of the condyle since the growth centre is already damaged in these cases. But during subsequent years, there is a chance of increased facial asymmetry due to continued growth of the mandible on the healthy side. This can only be avoided

by careful orthodontic appliances to increase the height of teeth on the operated side

and by only grafting of bone to increase the vertical heights of the ramus.

References

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