Recurrent Dislocation of Temporomandibular Joint Treated by the Dautrey Procedure – A Case Report and Literature Review

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ABSTRACT We report a case of recurrent bilateral dislocation of the temporomandibular joints of a 75-year-old gentleman treated successfully by the Dautrey procedure. There is no recurrence over a 30-months period. Relevant literature is reviewed. We suggest that as far as patients are medically fit and the operation is done properly, the Dautrey procedure can be an effective treatment for recurrent dislocation of the temporomandibular joint and the procedure can be considered even in old-aged patients.

Introduction

Cases of recurrent dislocation of the temporomandibular joint (TMJ) are occasionally referred to Oral-Maxillofacial Surgery Units for treatment. Dislocation occurs when the mandible moves out of the glenoid fossa and becomes locked anterior and superior to the articular eminence. If this persists for more than a few seconds, it generally becomes painful and is often associated with severe muscular spasms. Sometimes the condition is self-reducing while very often it demands manual reduction with or without intravenous sedation. Recurrent dislocation is a distressing condition to patients. This can be treated conservatively or surgically. For conservative treatment, sclerosant solutions such as alcohol (e.g. ethanolamine olate 5%), tincture of iodine, sodium psylliate and sodium tetradectyl sulphate (STD) have been proposed to be injected to the tissues around the joint, followed by a period of intramaxillary fixation (IMF). The purpose of injecting such solutions is to produce some extra-articular fibrosis, thus reducing the mobility of the joint and therefore the likelihood of dislocations. However, not only is injection a blind technique and bears potential risks, but also it is always quite painful during and after the procedure. Recently, botulinum toxin A injection into the lateral pterygoid has also been used.1 However, results of conservative management are unpredictable and may be short lived.

A number of surgical procedures have been used to treat the condition. These may involve modification of bony configuration around the joint by eminectomy or by increasing the height of the eminence by bone grafting or setting up a mechanical obstacle on the eminence by down fracture of the zygomatic arch (the Dautrey procedure). Some other procedures may alter the soft tissues affecting the joint motion. For example, scarification of the temporal tendon or turning down a temporal fascia flap to reinforce the capsule of the joint or formation of the external ligament by ligating to the fascia through drill holes in both the zygomatic arch and the condyle have been used. However, many patients seen are old patients with concurrent systemic illnesses. Very often, they are either unwilling or unable to withstand operations.

In the followings, we describe a case of an old gentleman with recurrent bilateral dislocation of the TMJs treated successfully with the bilateral Dautrey procedures. Relevant literature is also reviewed.

Case Report

A 75-year-old man was referred to the Oral-Maxillofacial Surgery Service for recurrent bilateral dislocation of the TMJs in June 2000. The patient complained that he had recurrent TMJ dislocations for more than 5 times a year in the last two years and the dislocations could not be self-reduced. The dislocations had been treated by
manual reduction on various occasions either in the Accident and Emergency Department or in our Unit. He was eager to have something done because he was fond of travelling in China and felt very stressful if dislocations happened during the journeys. He was still perfectly healthy and medically fit for operation. Clinical examinations showed that he had normal maximal incisal opening (> 40 mm), without clicking or joint noises and no deviation on mouth opening. Plain X-rays of TMJ views, lateral cephalometrics and orthopantomogram (OPG) were taken. It was found that he had a relatively steep posterior slope of the articular eminence, i.e. steep condylar guidance, as demonstrated in the OPG (Figure 1). He wore an upper full denture and lower partial Co-Cr denture. After explaining the treatment modalities including various conservative and surgical measures, with their associated risks and complications explained, the patient opted for surgery and it was decided to perform the bilateral Dautrey procedures for him.

The operation was performed under general anaesthesia in December 2000. A pre-auricular incision with a temporal extension as described by Al-Kayat and Bramley (1979) was made. After incision through the superficial layer of temporalis fascia and retraction of the skin flap, blunt dissection was made down to the periosteum of the zygomatic arch on which a horizontal incision was then made. Subperiosteal tunneling was done to expose the posterior half of the arch. An oblique osteotomy of the arch was made downwards and forwards to the lower border just in front of the articular eminence (Figure 2). An Obwegeser periosteal elevator was used to spring the arch laterally and downwards with controlled pressure so that the arch was locked in the undersurface of the articular eminence (Figure 3). No dislocation of the arch anteriorly from the zygomatico-temporal suture was found intra-operatively on both sides. Post-operative recovery was uneventful with no need for intermaxillary fixation. The post-operative OPG demonstrated stable locking of the arch under the eminence (Figure 4). No restriction of mouth opening, pain in TMJ, paresis of the facial nerve was found. Cosmetic appearance was also excellent. There was no recurrence of dislocation over a 30-months period up to present.
Discussion

Eminectomy and augmentation of the articular eminence are the two most common surgical procedures for the treatment of recurrent TMJ dislocations. Modification of bony configuration around the joint is the rationale behind these two procedures. In eminectomy, exposure and reduction of the bony articular eminence is performed with a view to removal of the anterior limit of the glenoid fossa. Although forward positioning of the condylar head is possible, there is no block to its posterior movement during mouth closing and dislocation is therefore no longer possible. Augmentation of the articular eminence using autogenous bone grafts from iliac crest or mastoid process has been proposed. However, a more widely used and convenient way to augment the height of the eminence is by setting up a mechanical obstacle on the eminence by down fracture of the zygomatic arch, i.e. the Dautrey procedure.

The procedure was first described by LeClerc and Girard (1943) with a vertical osteotomy of the zygomatic arch and lowering of its dorsal part to serve as an obstacle to excessive anterior excursion of the condyle. Later it was refined by Gosserez and Dautrey (1967) with an oblique osteotomy of the arch just in front of the articular eminence. In 1975, Dautrey presented 100 cases of recurrent dislocation treated by the procedure and there was only one failed case. He recommended that the procedure should be performed bilaterally. Boudreau and Tideman (1976) described a modified LeClerc procedure. Vertical osteotomy was maintained but a wedge of bone was removed from the superior portion of the proximal fragment of the eminence. The mid-region of the proximal fragment was notched to provide for insertion of the bony wedge, which prevented the superior dislocation of the depressed arch. Six cases were done with no recurrence. Recent reports all focused on the Dautrey procedure on small number of patients (about ten patients in each study) with high success rate (Lawlor, 1982; Chausse, 1988; Srivastava et al., 1994; Undt et al. 1997; Kobayashi et al., 2000).

Dautrey, Lawlor and Chausse et al. recommended the procedure be carried out bilaterally in all cases to avoid the development of asymmetrical TMJ function. However, Iizuka et al. did not found restriction of TMJ function as half of their patients only received operation on the affected side. We do agree that bilateral procedures are warranted for edentulous patients. Therefore, both sides were operated in this patient because he was edentulous for the upper jaw and with no posterior teeth for lower jaw. Kobayashi et al. considered the procedure to be most suitable for edentulous elderly patients. Three out of twelve of their patients even had the procedure performed successfully under local anaesthesia because of poor medical conditions.

Unmd et al. recommended that the Dautrey procedure is to be performed in patients with a steep posterior slope of the articular eminence, and to remove the posterior slope by eminectomy in patients with a rather flat eminence. In this patient, the posterior slope of the articular eminence was quite steep so we decided to perform the Dautrey procedure rather than eminectomy. Lawlor stated that the procedure was probably unsuitable for patients much over 32 years of age, as inherent elasticity of the bone is reduced. Undt et al. also did not recommend this procedure in patients of advanced age or in patients with a history of grand mal epilepsy. They recommended eminectomy as the preferred procedure in management of recurrent dislocation for these patients. Srivastava et al. and Kobayashi et al., however, considered age of the patient is less important. They stressed that a gentle method of elevating the arch and minimal elevation of the arch periosteum are the most important factors in preventing arch fracture. We agree to this view with respect to the age of patients but we also consider that eminectomy should be a better procedure for patients with neurologic disorders inducing increased muscular tension, or in patients suffering from grand mal epilepsy.

There are certain advantages of this procedure over eminectomy. It does not disturb internal structure of the joint as in procedures like eminectomy. There is no need for postoperative intermaxillary fixation or bone transplantation. It is a simpler and safer procedure than eminectomy because removal of the eminence requires entry deep into the joint space.Joint capsule is not interfered and bone cut can be very precise with a fissure bur. Moreover, normal functional movement of TMJ is not affected and cosmetic results are generally good. However, there are potential risks of the procedure because fracture of the zygomatic arch, paresis of the facial nerve, postoperative pain and internal derangement of TMJ may occur.

The zygomatic arch is cut obliquely downwards and forwards just in front of the articular eminence, thus increasing the height of the articular eminence and preventing excessive forward movement of the condyle. The delicate part of the manoeuvre is the lowering of the arch without fracture. Dautrey describes the technique as repeated movements gradually gently increasing in strength. Care should be taken not to strip the fascial and periosteal attachment from the anterior portion of the zygomatic arch, especially at the zygomatico-temporal suture. If their attachment is stripped off, a true fracture will occur at the suture and the continuity and elasticity of the arch will be lost.

Iizuka et al. and Kobayashi et al. used nasoseptal osteotome to move the cut end of the zygomatic arch laterally and then downwards. Srivastava et al. used a Bristow elevator to spring the arch laterally with repeated gentle movements. Then another elevator was used to push the arch downward until it lodged in a preformed groove on the under-surface of the eminence. We do not think that particular instrument is important so far as the arch can be sprung laterally and inferiorly with controlled pressure.
The modification of the LeClerc procedure proposed by Boudreau and Tideman by inserting a small bony wedge in the mid-region of the proximal fragment was innovative. However, we consider that correct angulation of the oblique cut should ensure stable locking of the dorsal part of the fractured arch under the eminence and therefore a thin wedge of bone is not necessary for blocking purpose. Kobayashi et al. advocated the use of oxidized regenerated cellulose or fibrin glue or both to fix the displaced arch when stability was in doubt. However, we think that if fracture of the arch does happen or there is instability of the arch, the situation can easily be remedied by rigid fixation with transosseous wirings or with mini- or micro-plates.

In summary, we suggest that as far as patients are medically fit and the operation is done properly, the Dautrey procedure can be an effective treatment for recurrent dislocation of the temporomandibular joint and the procedure can be considered even in old-aged patients.

References