TRANSORAL ODONTOIDECTOMY and UPPER CERVICAL STABILITY

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ABSTRACT:

Three patients requiring transoral transpalatal odontoidectomy were reviewed. Two were unstable and had compressive signs secondary to type II odontoid fracture and rheumatoid artritis, respectively. The third had a basilar invagination and was stable before transoral odontoidectomy but has developed instability in the early postoperative period. Patient with rheumatoid disease had immediate respiratory arrest although a successful posterior fusion and stabilization with Luque instrument was performed in the previous operation. Other two cases improved and discharged with minor deficits.

INTRODUCTION :

Cervical spine conditions, requiring occipitocervical (O-C) fusion for instability are associated with a variety of the medical problems; inflamatory diseases, congenital abnormalities, traumatic injuries and neoplastic processes (3, 4, 5). Some of them also cause compression either anteriorly or posteriorly. When treating the anterior compression via a transoral transpalatal route, O-C fusion for reconstruction of the stability should be investigated. Different technics to gain O-C fixation have been described, including the use of methylmethacrylate, bone, metal fixation with wires, screws, plates and contoured pins and rods, as well as the adjunctive uses of halos, SOMI braces, casts and collars (1, 4, 5). We present our experiences in patients who undergone a transoral approach.

PATIENTS :

DISEASE	SIGNS	RADIOLOGY	STAB.	OPERATIONS	STAB.	RESULTS
Trauma	left leg paresis	type II odontoid fracture-dislac. + ventral cord compression	un-stable	1. posterior fusion - Luque instr.	stable	
				one week later;		
CASE I				2. transoral trans-palatal odontoidectomy	stable	no deficit
Basilar invagination	quadriparesis, 9, 10. nerve deficits, down-beat nystagmus cerebeller sign	C1 assimilation+ odontoid inter-secting clivus-canal laine.	stable	1. transoral tarns-palatal odontoidectomy	un-stable	respiratory arrest+ quadriplegia
				3 months later		frustel quadriparesis
				2. Posterior fusion	stable	progression in preexisting signs
				17 months later		
CASE II				3. transoral trans-palatal upper 1/3 of C2 vertebra.	stable	minor deficit
Rheumatoid arthritis	rhematoid sign quadriparesis, 9, 10. nerve deficitis, cerebeller sign	odontoid tip destruction+ pannus+ventral compression of spinal cord	un-stable	1. posterior fusion +Luque instr.	stable	no improvement
				one week later		
				2. transoral odontoidectomy immediately	?	immediate respiratory arrest
CASE III				Crutchfield traction	stable	died 10 days later

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DISCUSSION :

Reducible atlantoaxial (A-O) subluxation without evidence of medullary compression by cranial settling or ventral pannus formation is probably best treated with posterior fusion. When the A-O subluxation is found to be irreducible, the relative importance of ventral or dorsal compression must be determined. In cases in which there is significant cervical medullary impingement by the posterior arch of the atlas or the rim of foramen magnum, a posterior decompression coupled with posterior fusion may be adequate. When significant cranial settling with odontoid subluxation or ventral pannus is primarily responsible for neurological symptoms, transoral decompression should be contemplated. In the latter circumstance, posterior fusion is frequently advisory (9).

Among our patients who were treated via a transoral transpalatal route for a ventral compression, two had preoperative detectable instability; one suffering from erosive synovitis and pannus formation due to rheumatoid disease, and other having type II odontoid fracture with granulation tissue. Their preoperative dynamic and post skelatal traction x-rays showed A-O instability. We had decided to establish a posterior stabilization for them before transoral approaches. In another case with basilar invagination, instability developed due to prior transoral odontoidectomy and O-C fusion was chosen to achieve either decompression and stabilization although a pure C1-2 posterior fusion with or without instrumentation was suggested by a number of surgeons.

Two general approaches have been suggested. The first involves sublaminar wiring of bone grafts on decorticated bed. Supplementation of wire and acrylic cement has been advocated by others. More recently, procedures incorporating rigid fixation, using Luque rods, other metalic implants has been described. These constructs involve the use of sublaminar wires and fixation of the occiput by passing wires epidurally through burr-holes (2, 8). Patients are stayed under traction aboud 3-7 days postoperatively, and immobilized by a cast or halovest for an interval of 6-12 months. But after the latter, the rigitidy of these construct may eliminate the requirement for the postoperative immobilization with a halo vest.

Case with basilar invagination was stable before his first transoral operation. But unfortunately soon after the operation he faced with respiratory arrest and rapidly improved by skeletal traction. This deterioration should have been the result of the operative interruption of the congenital fusion of odontoid with the assimilated C1 and the clivus. Then for the stabilization, posterior fusion with bone was performed after posterior decompression and discharged with cast. Seven months later he came back suffering from ventral compression and reoperated again via transoral transpalatal route to resect the base and the upper one-third of C2. Only collar was given and could walk independently during his discharge.

After reconstructing the fixation between O-C3 with Luque rods, we did not witnessed any instabilization postoperatively and one week later patients undergone a second stage operation as a transoral approach. Patient with type II odontoid fracture who were stabilized without posterior decompression improved. But the other with rheumatoid artritis developed respiratory arrest during the early postoperative period. Although cervical traction was performed, no neurological improvement was noted and died in ten days. Probably the deterioration was due to surgical trauma although high speed drill and microsurgical technic were employed for the removal of odontoid and the extensive granulation tissue and as well as the tectorial membrane to establish adequte dural decompression.

We incised the palatum molle in three of the four transoral procedures. All had resulted with deficient wound healing although meticulous closure of the layers and postponing of oral alimentation were performed to avoid this complication.

The postoperative control of the operation with magnetic resonance imaging was also done in the patient whose posterior stabilization was performed with bone fusion and Luque instrument. Since the instrument was made up of ferromagnetic material, the images were distorted, especially in axial slices. But we didn't observed tissue implants are used such as stainless steel or titanium, these effects will appear to be negligible (3).

In conclusion, we belive that occipitocervical stabilization with Luque rods, supplemented by bone fusion chosen when there is upper cervical instability.

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