

# Pharyngeal Surgery: Meningitis Following Accidental Rupture of a Meningocele

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Problems and complications of cleft lip and palate cases have been well documented in the literature for many years. One would think that most of the possible complications should have been covered. This is a report of an unusual complication that occurred during a retropharyngeal dissection on a bilateral cleft lip and palate patient.

## Case Report

This case involves a 13 yr. old white male (S.G.) who was born with a bilateral, complete cleft of the primary and secondary palates. The lip was repaired at four months of age and the palate at twenty-seven months. A columnellar lengthening was done at four years; a push back of the palate with nasal mucosal flaps at six years; and a stabilization of the premaxilla with a bone graft at seven years. The patient had velopharyngeal incompetence with the characteristic nasal speech. This velopharyngeal incompetence was verified by X-ray studies that also showed cervical spine abnormalities with incomplete segmentation of the vertebrae of C<sub>2</sub>, C<sub>3</sub> and C<sub>4</sub> (Figure 1.).

At 13 years of age an operation was carried out to insert an implant in the retropharyngeal space. During the process of the blunt dissection in the retropharyngeal space, a moderately firm resistance was encountered over the prevertebral fascia at the C<sub>1</sub> level. This gave way with a palpable "pop" or "snap" and spinal fluid suddenly appeared in the wound. The dissection was immediately terminated and the incision closed in a watertight manner with a two layer closure.

The patient was placed on oral, antibiotics postoperatively. He became febrile within twenty hours, his temperature rising to 105.6° F., and a spinal tap showed turbid fluid from which *H. influenza* was isolated. He was placed on heavy doses of ampicillin and cephalosporin intravenously until sensitivity studies were completed and then the cephalosporin was discontinued. He responded well to this treatment and the meningitis cleared within ten days without sequelae.

## Radiographs

After the meningitis cleared, basilar skull and spinal column radiographic studies showed abnormalities of the basilar skull and cervical spine. The cervical spine films illustrated incomplete segmentation of C<sub>2</sub>, C<sub>3</sub> and C<sub>4</sub> with spina bifida occulta of the posterior neural arch of C<sub>4</sub> (Figure 1). The basilar skull films (Figure 2A and B) showed deformities of the foramen magnum, C<sub>1</sub> and C<sub>2</sub>. The foramen magnum was greatly enlarged and deformed with a "pear-shape" due to failure of fusion of the



FIGURE 1. The failure of segmentation of C<sub>2</sub>, C<sub>3</sub> and C<sub>4</sub> are readily noted.

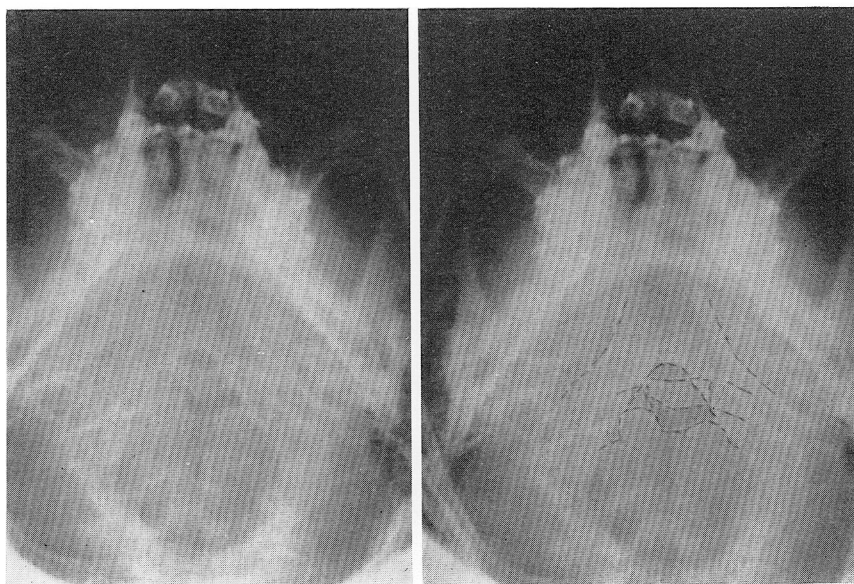


FIGURE 2A and B. The large "pear-shaped" foramen magnum, failure of fusion of the anterior arch of C<sub>1</sub> with reversed curvature, and bifid odontoid are shown, as noted in the film and again with the defects outlined.

clivus at the anterior edge. The abnormality of C<sub>1</sub> consisted of an anterior unfused portion of the arch that was reversed in its curvature and concave from anterior to posterior. The C<sub>2</sub> abnormality revealed a deformed, bifid odontoid process.

These upper cervical and basilar skull deformities produced an anterior defect at the foramen magnum —C<sub>1</sub> junction. This defect, together with what happened at the time of operation, is strongly compatible with the diagnosis of anterior meningocele at the foramen magnum —C<sub>1</sub> junction that was perforated during the dissection. As a result, it served as a portal of entry for the ensuing meningitis, which could have had tragic results in pre-antibiotic days.

### Discussion

Although the incidence of this is rare, it is felt that there are certain factors that should alert one to the possibility.

Almost all patients who are candidates for a pharyngeal flap or a retropharyngeal wall implant have had lateral cervical and skull roentgenograms for the evaluation of the amount of velopharyngeal incompetence. The presence of cervical spine anomalies should alert one to the possibility of other associated bony deformities, such as the one just described. In these cases, it is recommended that a basilar view of the skull be taken; and, if similar abnormalities are noted as were found in this case, the likelihood of an anterior meningocele should be suspected, and any planned nasopharyngeal surgery should be cancelled; or proceeded with only the greatest care and knowledge of the increased risk.

### Summary

An unusual case of meningitis following accidental rupture of an upper cervical-foramen magnum anterior meningocele during a retropharyngeal dissection, is presented together with the roentgenographic findings. It is recommended that the possibility of this deformity be suspected in patients with bony cervical spine abnormalities. Further roentgenographic studies of the basilar skull and upper cervical vertebrae are indicated.