

Prevention and treatment of septal deformity in infancy and childhood

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SUMMARY

There are two basic types of septal deformity, namely anterior nasal deformity and combined septal deformity, which may occur independently or both together. They are considered to be acquired from different types of pressures on the foetus during pregnancy or parturition.

The incidence of anterior nasal deformity was found to be 4% in cases of spontaneous vaginal delivery, but 13% in cases of increased pressure as persistent occipitoposterior.

The combined septal deformity is part of a facial deformity, and is best tested by using simple nasal testing struts. The incidence of straight septa varied with the degree of pressure with an average of 42%. In adult surveys a little over 20% are straight.

Methods of manipulation are described using special infant forceps. Indications for manipulation are: Stuffy nose, feeding problems and sticky eyes. The procedure and results of rapid maxillary expansion are presented.

THE two basic types of septal deformity — anterior nasal deformity and combined septal deformity, may occur independently or both together, and are usually acquired from pressures on the foetus during pregnancy or parturition.

CONSIDERING THE ANTERIOR NASAL DEFORMITY

This is due to direct trauma and only causes cosmetic worries. It occurs in about 4% of normal vaginal deliveries, more in cases of severe pressure but rarely in cases of caesarian section (Table 1). Also reported by Jeppesen and Windfeld (1972), Gray (1974) and Quante et al. (1976). It is mainly caused during descent in the pelvis, with some extension of the head during internal rotation. There is pressure on the side of the jaw from the oncoming shoulder and the side of the forehead and nose is wiped across the walls of the pelvis. It is usually associated in a varying degree with

1. External deformity, with asymmetry of the external nares and bending of the anterior septal cartilage.

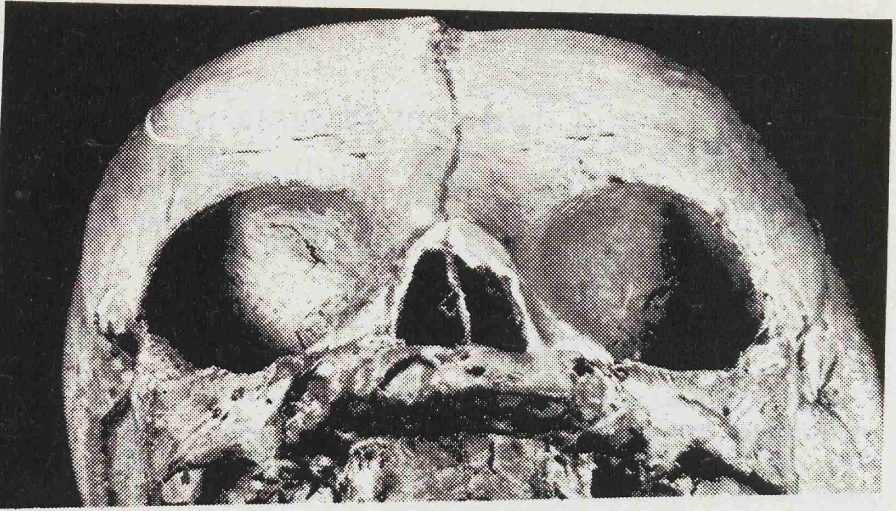


Figure 1. Skull of baby showing depressed fracture and deformation of the nasal bones, anterior cartilage deformity and parietal bone moulding at birth (reproduced from A. Steiner by permission of the author).

2. Distortion of the bones of the nasal pyramid (Figures 1 and 2).
3. Distortion of the junction of the cartilage and maxillary spine (Figure 2).
4. Angulation deformity of the jaw (Gray, 1974).

Review of adult skulls has demonstrated the close association of distortion of the bony nasal pyramid with anterior cartilage deformity (Gray, 1974).

TREATMENT

Minor deformity and bending of the cartilage is self reducing, but if the deformity is still present after 3 days then there is deformity of the nasal bones. Manipulation, using special infant septal forceps (Gray, 1965, Down Bros. catalogue L. H. 120-016), is done by first elevating and manipulating the nasal bones, then the cartilage and tip of the nose are lifted up, and the cartilage swung back into position on the groove of the nasal spine. The mother then applies lateral pressure on the side of the nose, with the baby held in her arms, for 5 seconds after each feed for 5 days. This is very important.

CONSIDERING THE COMBINED SEPTAL DEFORMITY

This is due to transmitted pressure across the malar bones (the widest part of the baby's face) compressing the maxilla, causing malocclusion of the teeth, elevation of the arch of the palate, and tending to compress the septum against the firm base of the skull. Thus it is basically a facial deformity.

If there is little difference in the pressures on each side of the face, the roof of the palate rises symmetrically compressing the septum against the firm base

of the skull. This causes irregular distortion or even fracture of the septum and splaying out of the vomer-cartilage junction (Figure 3). Because there is no bending of the vomer-cartilage junction (and thus no loss in the opposing growth controlling forces of the bone and cartilage) the deformity does not increase with age.

If the pressure is unequal and more on one side, the palate is elevated on that side, tilting the vomer to the opposite side causing kinking of the vomer-cartilage junction (Figure 4). Note (Figure 5) the compensatory enlargement of the ethmoid bulla and turbinates on concave side of the septum. As there is loss of the opposing controlling forces at the vomer-cartilage junction this deformity tends to increase with age. The association of palatal and septal deformity was recorded as long ago as 1882 by Welcker.

The presence of septal deformity in infants is best demonstrated by the passage of polythene nasal testing struts 6 m.m. wide by 2 m.m. thick (Gray 1969, 1972, 1974) (Figure 6).

INCIDENCE OF SEPTAL DEFORMITIES IN 2380 BIRTHS





| TYPE | NO. | STRAIGHT  | BILATERAL  | UNILATERAL  | EXTERNAL  |
|------------------------------|------|---|--|---|---|
| S.V.D. | 2094 | 43% | 26% | 31% | 79 in 2094 4% |
| ELECTIVE L.U.C.S. | 106 | 48% | 25% | 27% | NIL |
| NON- ELECTIVE L.U.C.S. | 113 | 40% | 34% | 26% | NIL |
| P.O.P. | 67 | 26% | 37% | 37% | 9 in 67 13% |
| TOTAL | 2380 | 42% | 27% | 31% | 4% |

Table 1. S.V.D. = Spontaneous vaginal delivery, L.U.C.S. = Lower uterine Caesarian section, P.O.P. = Persistent occipito-posterior position.

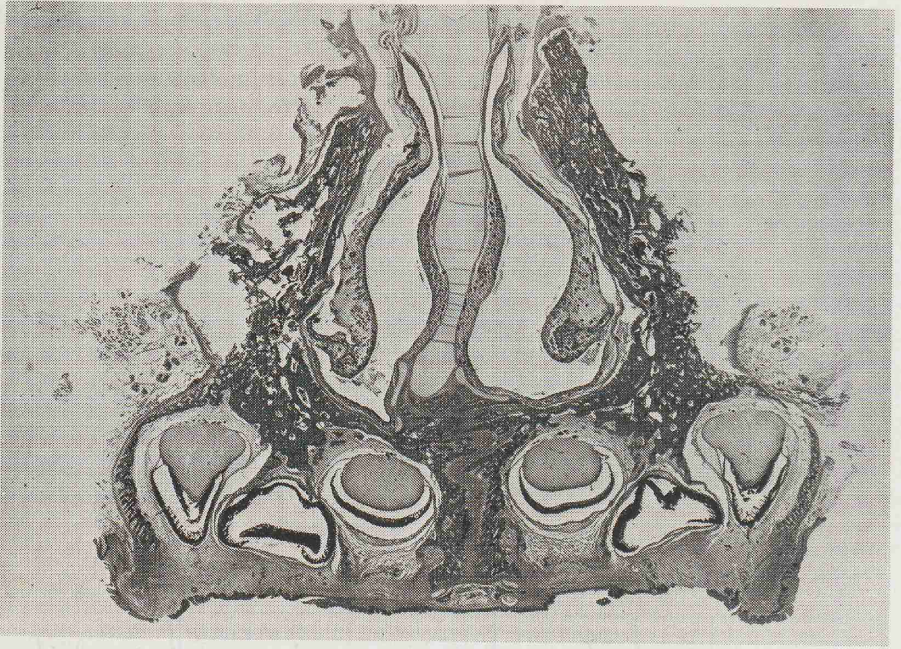


Figure 2. Section at birth of anterior end of maxilla viewed from the front. This demonstrates (1) dislocation of the cartilage to the right, off the nasal spine, (2) depressed deformation of the left nasal bone. In this case also there is elevation of the floor of the maxilla on the left which is associated with a combined septal deformity.

Table 1 demonstrates the incidence of septal deformity by routine testing over 6 months at the King Edward Memorial Hospital for Women.

The straight septum is found in a little over 20% of adult skulls (McKenzie, 1882-84; Gray, 1974).

TREATMENT

Manipulation is performed by passing the special infant septal forceps well into the nose and firmly pressing the back of the palate caudally and downwards for 15-20 seconds. This also tends to expand the maxilla, reducing its deformity and to pull the septum straight. The septum is then manipulated to the midline. This can be done satisfactorily (with increasing difficulty however) up to the age of 9 months. Figure 7 demonstrates the change in contour of the palate with manipulation in a 3 day old baby.

INDICATIONS FOR MANIPULATION ARE

1. Stuffy moist nose, respiratory problems, cyanotic attacks.
2. Feeding problems.
3. At times sticky infected eyes.

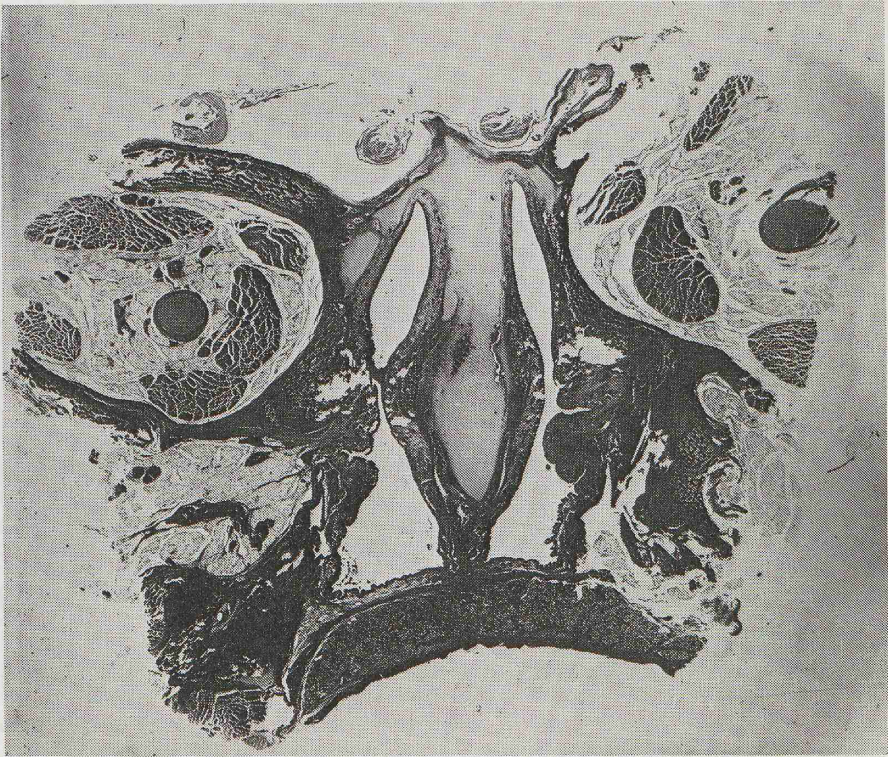


Figure 3. Combined septal deformity due to bilateral pressure. Section at birth. Note the irregular compression and distortion of the septal cartilage causing fracture of the cartilage.

| Airway | | Infections | | Sniffing itching | | Wheezing asthma | | Psychological | |
|--------|----------------|------------|----------------|---------------------|----------------|--------------------|----------------|---------------|----------------|
| No. | Good result | No. | Good result | No. | Good result | No. | Good result | No. | Good result |
| 310 | 270 | 212 | 128 | 174 | 162 | 133 | 88 | 310 | 94 |
| (100%) | (87%) | (70%) | (60%) | (56%) | (93%) | (43%) | (66%) | (100%) | (30) |

Table 2. Medical results 310 cases R.M.E.

RESULTS OF MANIPULATION

Considerable improvement — often dramatic — occurs in the symptoms in 24 hours of manipulation. On follow up 75% of the septa are well straightened. After the age of 4 years, nasal obstruction may be greatly improved by rapid maxillary expansion or conservative septoplasty.

RAPID MAXILLARY EXPANSION

Is performed by cementing an expanding device to the upper back teeth. (Gray

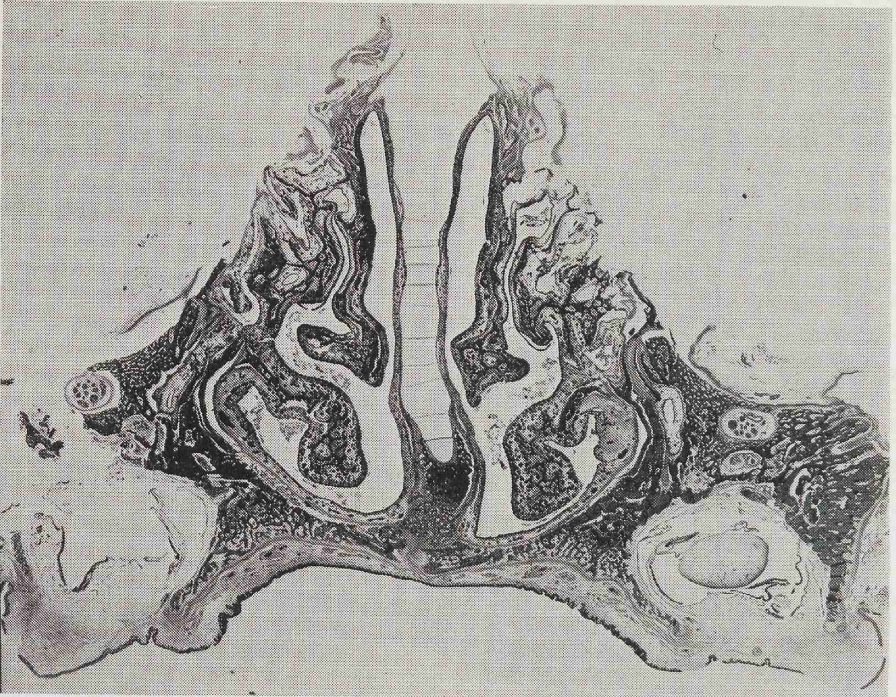


Figure 4. Combined deformity due to unilateral pressure. Section at birth viewed from the front. Note elevation of the palate on the right with early angulation of the cartilage-vomer junction. Note the even sized turbinates.

and Brogan, 1972; Gray, 1974). The screw is turned daily and the maxilla opens by about 8 m.m. in 3 weeks. Table 2 demonstrates the results in 310 cases selected for medical reasons.

RÉSUMÉ

L'auteur décrit les deux types de déformation septale — déformation nasale antérieure et déformation septale combinée — survenant séparément ou simultanément chez le fœtus sous l'effet des pressions produites sur la face au cours de la grossesse ou de l'accouchement.

Le premier type est consécutif à une pression latérale de la pyramide nasale contre la paroi pelvienne. Le second résulte d'une pression exercée sur les régions malaires déterminant une élévation du palais, une malocclusion dentaire et une compression du septum sur la base du crâne.

L'auteur propose un traitement précoce à l'aide de manipulations endonasales destinées à corriger les déformations observées dans les premiers jours après la naissance.

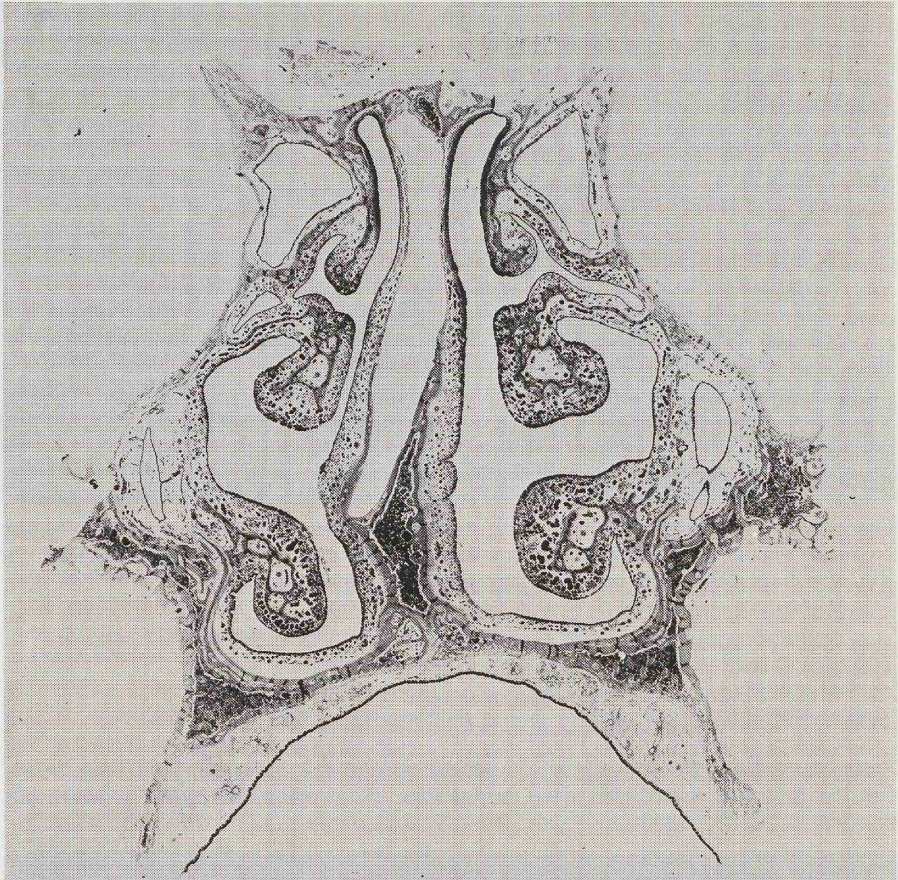


Figure 5. Combined septal deformity following unilateral pressure. Section of a baby aged 6 months viewed from the front. Note elevation of palate on the left with kinking of septum at the cartilage-vomer junction to the right. Note the compensatory enlargement on the left of the turbinates and ethmoid bulla.

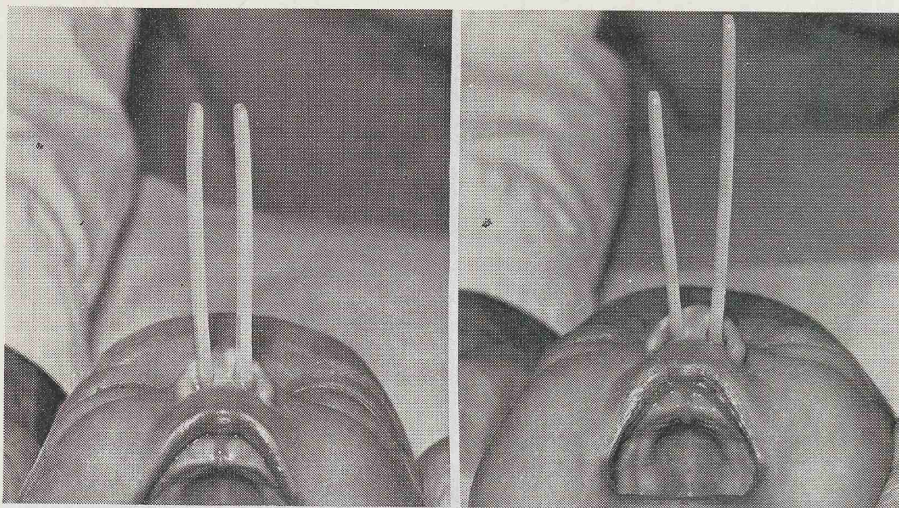
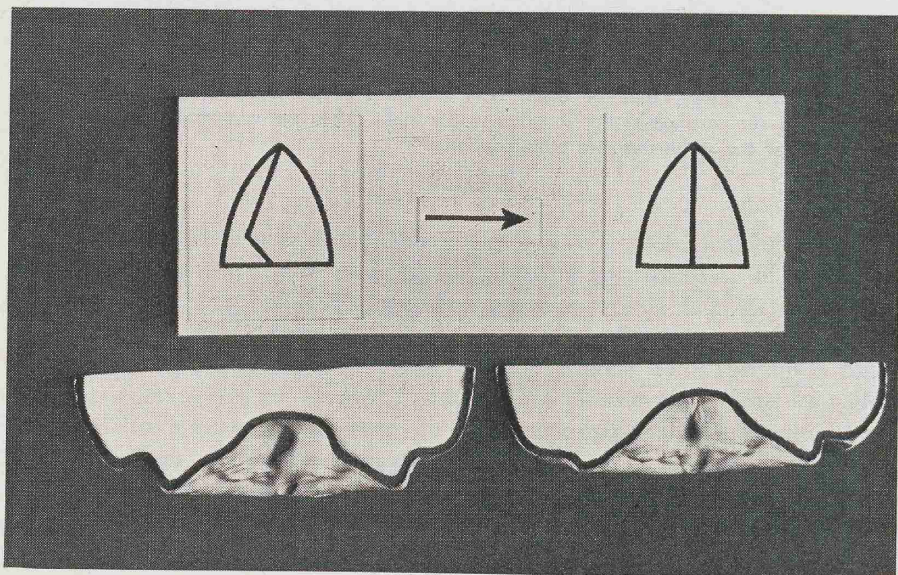


Figure 6. Nasal testing procedure. Note the even passage of struts (6 m.m. by 2 m.m.) on the left with normal straight septum. On the right there is obstructed passage of the strut down the baby's left nose and normal passage on its right.

Figure 7. Palatal cast cut coronially about the middle of a 3 day old baby taken before (on the left) and immediately after manipulation. Note change in palatal contour with straightening of the septum.



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