



ONE YEAR OBSERVATIONAL STUDY OF NEWBORN NASAL SEPTAL DEVIATION AT A TERTIARY CARE HOSPITAL

ENT

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ABSTRACT

The nasal septum being an important component for the normal facial growth, any deviation of septum may lead to facial asymmetries and long term morbidities. Total of 215 newborns were studied to determine incidence and various risk factors for development of DNS. Detailed history was taken from mother with special emphasis on parity, mode of delivery, weight at birth, prolonged labour, birth trauma and intrauterine position. Clinical examination was done including strut test for diagnosis. Incidence of DNS was found to be 17.21%. Majority of deviation were seen in babies born to primiparae (45.95%) and with breech presentation (40.54%). Birth weight >3kg, prolonged duration of labour and vaginal route of delivery were other risk factors. Our study showed that DNS is common in newborns and various risk factors are associated with it. Early detection and management of neonatal septal deviation can prevent various morbidities associated with DNS in adult life.

KEYWORDS:

Deviated nasal septum, Strut test

INTRODUCTION

The nasal septum plays an important role in normal facial growth. Deviated septal growth contributes to the development of facial asymmetries. Asymmetries of both external and internal nose as well external facial asymmetries is correlated with nasal septal deviation.^{1,2,3,4}

Varying degree of nasal septal deformity occur at a considerable rate in newborn. Various studies have mentioned incidence of newborns deviated nasal septum to be from 0.6% to 31%.^{5,6} Abnormal intrauterine position causing compression on the nose and torsional forces during parturition causing displacement of septum is one of the most common etiological factors for development of deviated nasal septum.²

Nasal obstruction is the most common manifestation of deviated septum. These may lead to cyanotic spells, high pulmonary resistance and eventually respiratory failure in infants as they are obligatory nasal breathers. Immediate correction of septal deformity is important otherwise these may persist till adult life and cause long term morbidity.⁶ These are eustachian tube dysfunction, otitis media, sinusitis, epistaxis, upper and lower respiratory tract infections, dental malalignments and poor general health.⁷ For above reasons routine screening of newborns for deviated nasal septum should be done and early treatment should be instituted.

AIMS

1. To study and determine the incidence of deviated nasal septum in neonates.
2. To study various risk factors for the development of neonatal nasal septal deviations

MATERIALS & METHODS

The present study was a prospective observational study where a total of 215 newborns (0-28) days were examined for DNS in the in the department of Obstetrics and Gynaecology, Pediatrics or ENT in Silchar Medical College & Hospital, Silchar for one year. Out of these 215 newborns, 37 cases were diagnosed with septal deviation.

A detailed history was taken from the mother and special emphasis was given on the parity, mode of delivery, weight of baby at birth, intra-uterine position during delivery and any other significant complaints. ENT examination of the newborns was undertaken. Guardians were duly informed about the study and proper consent was taken before performing any procedure.

Clinical examination of the nose was done for detection of nasal septal deviation. First external appearance of nose was seen. Side of nasal obstruction was seen using cold spatula test with Luc's tongue depressor and cotton wool test. Amount of misting on metal Luc's tongue depressor was noted bilaterally when it was held in front of the nose. Any inequality points towards the side of obstruction. Movement of cotton wisp held near the external nares one side at a time and any inequality also gives fair idea of nasal obstruction. Then the nasal cavity examined with help of otoscope. Finally strut test was performed. Struts used were made of polyethylene strips which had a length of 10 cm, with width of 4 mm and a thickness of 2 mm. The neonate was comfortably put on a couch, with an assistant stabilizing the head. The struts were lubricated with glycerine and were gradually introduced into one nasal cavity, hugging the septum and passing along the floor. No undue pressure was applied and the length of the strut that passed smoothly was noted. The same procedure was carried out through the other nostril. In case of a straight septum, the strut should pass till the 4 cm mark bilaterally, while in case of a DNS, it will be stuck at 1.5 to 2 cm on that particular side. Following recording of the readings, the struts were gradually withdrawn and the neonate was observed for 5 minutes.



Figure 1: Cotton Wool Test in a newborn for detection of septal deviation



Figure 2: Strut Test in a newborn for detection of septal deviation

RESULTS AND OBSERVATIONS

37 cases with septal deviation in newborn (0-28) days were diagnosed following random examination of 215 newborns in the Departments of Obstetrics and Gynaecology, Pediatrics and ENT between June 2014 to May 2015.

In this study incidence in the newborn was found to be 17.21%. Out of 215 newborns examined, 124 were male and 91 were female. 16.94% males and 17.58% females had deviation of septum respectively. Majority of the newborns presented with deviation to the right (54.05%) followed by 40.54% of the cases having deviation to the left. Only 5.41% had bilateral deviation.

Newborn	Total cases	DNS	Percentage
0-28 days	215	37	17.21%

Table 1: Incidence of DNS.

Sex	No. of cases examined	DNS	Percentage
Male	124	21	16.94%
Female	91	16	17.58%

Table 2: Gender distribution of DNS.

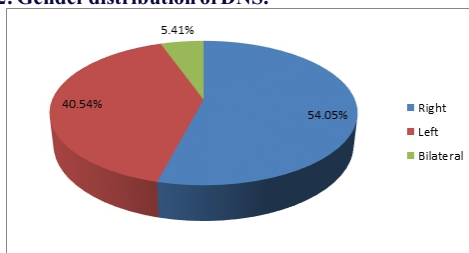


Figure 3: Showing side of DNS.

Out of total 37 newborn cases in this study, majority of the patients i.e. 17 cases (45.95%) were born to primiparae. Number of cases decreased with increasing parity with 9 and 7 cases belonging to first and second parae respectively while only 2 cases each belonged to third and fifth parae.

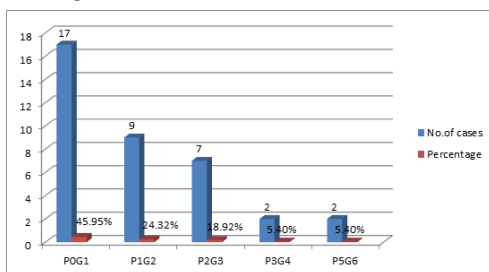


Figure 4: Percentage of DNS in relation to parity of mother.

In this study majority of the newborns with DNS were born by breech presentation (40.54%) followed by 13 cases (35.13%) of right occipitoanterior position. Only 9 cases (24.32%) had left occipitoanterior presentation.

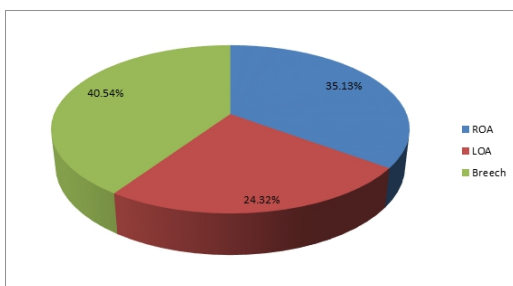


Figure 5: DNS in relation to the intrauterine positions.

In the present study, majority of the newborn patients (51.35%) were delivered by vaginal route followed by forceps (29.73%). Only 7 cases (18.92%) were delivered by caesarean section.

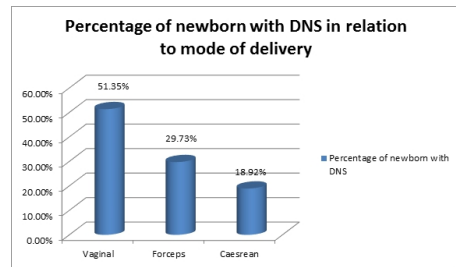


Figure 6: DNS in relation to the mode of delivery.

Duration	Total	DNS	Percentage
Prolonged	19	11	57.89
Normal	196	26	13.27

Table 3: DNS in relation to the duration of labour.

In this study incidence of deviated nasal septum showed an upward trend with increasing birth weight. Out of the 37 newborn cases diagnosed with septal deviation, majority of the patients presented with birth weight over 3 kg (45.94%), followed by 35.14% of the babies having normal birth weight of 2.5-3 kg. 18.92% of the cases had birth weight less than 2.5 kg.

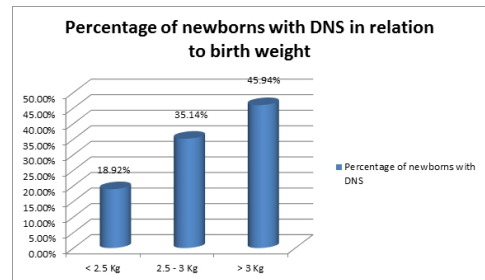


Figure 7: DNS in relation to birth weight.

DISCUSSION

Several studies have quoted incidences of neonatal nasal septal deviation ranging from 0.6% to 31%.^{5,8} While Lindsay Gray found incidence to be 4%^{2,9} incidence was found out to be 20% by Anil S. Harugop *et al.*,¹⁰ Incidence of deviated nasal septum in newborn was found out to be 14.5% out of 200 cases by Abhinandan B. *et al.*¹¹ Jazbi B., Mukhesh Sooknundun *et al.*, and Saim and Said observed incidences to be 1.25%, 25% and 21.8% respectively.^{7,12,13} Incidence of DNS in the newborn was found to be 17.21% in our study.

Out of 215 newborns examined, 124 were male and 91 were female. Out of 124 male newborns 21 i.e. (16.94%) and 16 out of 91 female newborns (17.58%) had deviation of septum respectively. Anil S. Harugop *et al.*¹⁰ in their study found the DNS to be 17.42% and 22.03% in males and females respectively.

Side of the DNS is related to the intra-uterine position with DNS to the right seen in left occipito anterior (LOA) positions and in right occipito anterior positions (ROA) the DNS is to the left. This finding is supported by Chintapatla *et al.* and Asterios *et al.*^{5,14} In the study by Anil S. Harugop *et al.*¹⁰ the incidence of right and left sided DNS was 51.02% and 46.94% respectively. In our study 54.05% newborns had DNS towards right followed by 40.54% newborns with DNS to left.

Majority of the newborns with DNS (45.95%) were born to primiparae and number of cases decreased with increasing parity. This was similar to findings of Jappesen and Mindfield, Abhinandan *et al.* (48%) and Anil S. Harugop *et al.* (26.19%) where they found incidence higher in neonates born to primipara as compared to multipara.^{10,11,15}

Intra-uterine malposition is significantly associated with higher incidence of nasal septal deviation. This is because constant pressure by the uterine walls over the malar prominences of the newborn causes high arching of the palate and buckling of the septum as per birth moulding theory.² Majority of the newborns with DNS were born by breech presentation (40.54%) followed by 13 cases (35.13%) of right occipitoanterior position. Only 9 cases (24.32%) had left occipitoanterior presentation in this study. This was similar to that of studies

carried by Gray, Jappesen and Mindfield, Abhinandan *et al.* and Satheesh. S, Rajina. K.^{11,15,16,17}

Abhinandan B *et al.* and Satheesh. S, Rajina. K.^{11,17} found that babies born by vaginal route has deviation of septum. Similarly in this study nasal septal deviation was maximum in babies delivered vaginally, and least in newborn delivered by caesarian section.

Most of the studies have observed that prolonged labour is an important determinant of neonatal nasal septal deviation. Prolonged labour leads to more trauma to the nasal septum as the fetal head including nose has to negotiate through the birth canal. But Asterios *et al.* have found no statistically significant relation between DNS and prolonged duration of labour.¹⁴

Owing to mismatch between the birth passage and the space required during the process of parturition, high birth weight neonates has higher incidence of DNS. R. Bhatia *et al.*, Abhinandan *et al.* and Anil S. Harugop *et al.* in their respective studies have supported it.^{10,11,18} In our study also deviated nasal septum showed an upward trend with increasing birth weight.

CONCLUSION

Present study included 215 neonates and DNS was observed in 37 cases with incidence being 17.21%. Various risk factors for the development of neonatal nasal septal deviations were studied and observations were made. First and foremost, newborns of primipara mothers are at greater risk of developing DNS than multipara mothers. Also the intra-uterine malpositions with breech being the most common malposition has its role in DNS. Newborns delivered by vaginal route followed by forceps and having high birth weight had significantly higher incidence of DNS.

Now the early detection and early management of neonatal septal deviation can prevent various morbidities associated with DNS in adult life. One of the methods is routine screening of newborns. For this purpose a safe, non-invasive, effective and non-expensive test can be employed which is strut test. Whether septal manipulation and septal reduction has any effective role on long term basis is debatable. Nevertheless routine screening for early detection and early correction is advocated in neonatal nasal septal deviations.

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