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Case report

Tessier 30 symphyseal mandibular cleft: Early simultaneous soft and hard tissue correction – A case report

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ABSTRACT

A symphyseal mandibular facial cleft (Tessier 30) is a rare congenital abnormality. Nonunion of bone in the symphysis of the mandible, median cleft of the lower lip and tongue adherence in the midline to the floor of the mouth are the principle features of the anomaly. A satisfactory result can be achieved with early surgical correction of both hard and soft tissue defects in the age of 6 months. More than 3 years follow-up shows total bony fusion of the symphysis and normal lower lip function. There were only left deciduous central incisor and the ipsilateral tooth bud of the permanent central incisor missing.

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1. Introduction

Median cleft of the lower lip and mandible is an extremely rare maxillofacial deformity. In the literature, about 65 reported cases have been described (Oostrom et al., 1996). After that only few cases have been published. Embryologically, the mandible develops from the fusion of two mandibular prominences, which are derived from first branchial arch (Gosain and Moore, 1997). The symphysis mandible is formed when the embryo is about 25 mm in length and ossifies during the first year postnatally (Oostrom et al., 1996). Merging of paired mandibular prominences produces the lower jaw, lower cheek, and chin regions of the face (Gosain and Moore, 1997). Failure of the mandibular prominences to unite in the midline produces a central defect of the lower lip and chin, which is referred to as number 30 cleft by the Tessier classification (Tessier, 1976; Ibrahim et al., 2002).

Principle features of symphyseal mandibular cleft are: (1) complete median cleft of the lower lip with extension of cleft may vary from a simple notch in the vermilion to a complete cleft involving the tongue, lower lip, chin and extending up to cervical region for varying distance. (2) Notching of mandible to complete cleft of mandible allowing independent movements of the mandibular segments. (3) Anomaly of tongue including bifid tongue and tongue tie. (4) Associated features like, lack of hyoid bone, thyroid cartilage and even manubrium sterni.

In this report, we present a complex case of an extremely large median mandibular cleft extending up to hyoid region with a complete cleft of mandible and ankyloglossia. The accepted treatment protocol on the basis of limited clinical experience is primary soft-tissue reconstruction and delay of the bony reconstruction until 8–10 years of age (Armstrong and Waterhouse, 1996; Millard et al., 1971). We had decided to perform simultaneous repair of soft and hard tissues at an early age. A follow-up of more than 3 years is presented including the development of dentition.

We report a complex symphyseal mandibular cleft case with ankyloglossia, its treatment and more than 3 years follow-up.

2. Case report

A 1-week-old baby boy was referred to our unit with a median mandibular cleft extending from the lower lip to the hyoid region, cleft of mandible symphysis and ankyloglossia. The baby was the fifth child of healthy parents with no family history of cleft lip or cleft palate or other congenital abnormalities. The pregnancy was uneventful, and the child was vaginally delivered at full term. The history of the patient revealed that there was no exposure of the mother to radiation and teratogens during pregnancy. There was no consanguinity between family members either.

On physical examination, a complete cleft located at the midline (Figs. 1 and 2) extending through the whole lower lip to the region of hyoid bone, associated with the involvement of skin, mucosa, muscle, and bone allowing independent movement of the mandibular segments, which were approximately 1.5 cm apart (Fig. 3). Moreover, the tongue adhered to the floor of the mouth (Ankyloglossia). The contour of the upper face was normal. This deformity

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Fig. 1. One-week-old baby boy having median soft and bony mandibular cleft.



Fig. 2. Marking of the incision and excision of the soft tissue covering mandibular defect.

was considered to be a Tessier 30 cleft. There was no abnormality of hyoid bone (Fig. 12), sternum and clavicles (Figs. 8 and 11).

2.1. Surgical procedure

When the baby was 6 kg of weight and around 6 month of age, it was decided to repair the cleft lip with release of ankyloglossia and repair of bony defect. The operation was carried out with naso-endotracheal intubation. An incision was made along the margins of the cleft lip extending over skin, white roll, vermilion and mucosa over lip and mandibular segment (Fig. 2). Dissection was done to separate skin, muscle and mucosa. Through this incision, the mandibular defect was exposed (Fig. 3). Mucoperichondrium was elevated from the cartilage over the alveolar portion of mandibular

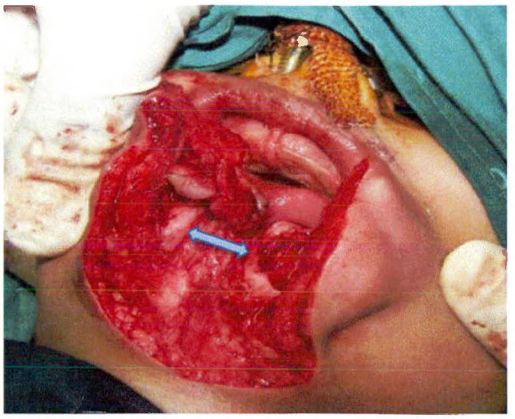


Fig. 3. Exposing mandibular segments. (Arrow points to the cartilage stumps of mandibular segments being 1.5 cm apart. Tongue is fixed to the tissue between the stumps and the floor of the mouth).

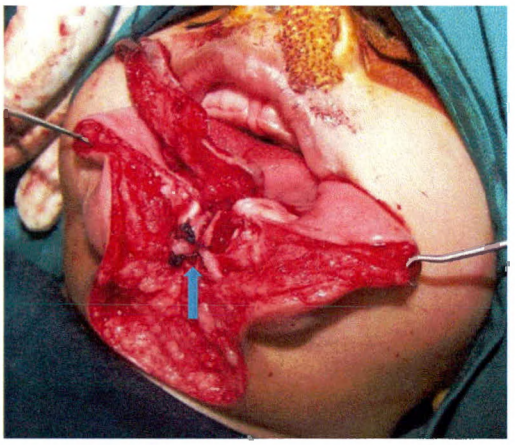


Fig. 4. Fixation of cartilaginous stump with two 1-0 Vicryl sutures (Arrow). This cartilage has truly transformed in to bone 3 years later.



Fig. 5. Tongue which was fixed to floor of the mouth and mandibular stump was released and mobilized.

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Fig. 6. Skin and mucosa closure with Z-plasty at chin and below white roll.



Fig. 7. Six months follow-up with good aesthetic outcome. No deciduous teeth were erupted.

segment. The cartilage was identified on both the end of mandibular segments. Both mandibular segments were fixed at the base of mandible with 1-0 Vicryl sutures on both sides (Fig. 4). We used strong suture instead of wire and plate because it may extend over the mandibular stump and damage tooth bud. Tongue was released from the floor of the mouth (Fig. 5). The soft-tissue coverage of this mandibular segment and the floor of the mouth were provided with the mucoperichondrial flap. The lower lip was reconstructed in anatomical layers with two big Z-plasty one at the chin and another below the white roll (Fig. 6). During the postoperative period, the patient did not show any sign of infection. Surgical wound healing occurred without any problems. All sutures were taken out on the 7th postoperative day. After 6 months, there was no mouth incompetency such as drooling, no aspiration of fluid and mandibular segments were stable on manipulation (Fig. 7). Deciduous teeth were not erupted during this time. CT scan was done 3 years later to re-evaluate the mandibular union (Fig. 9). Divided anterior nasal spine was the only possible sign of a maxillary median cleft. We found central incisor was missing from



Fig. 8. Three years follow-up with good aesthetic result and erupted teeth.

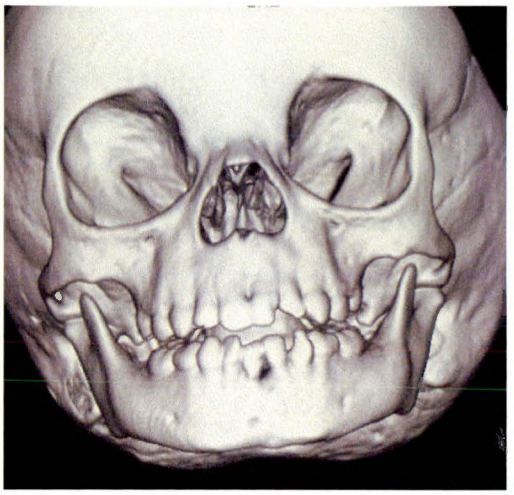


Fig. 9. Post op CT scan at age three and half years shows bone formation without any defect between mandibular segments with normal mandibular growth. Anterior nasal spine is divided.

deciduous dentition and permanent tooth buds on left side. Deciduous dentition was without diastema. All tooth buds for permanent teeth were present except lower left central incisor (Fig. 10). Bone formation between mandibular segments was seen without any defect. Mandibular growth was normal.

3. Discussion

Atypical craniofacial clefts are rare, the incidence being estimated at 1.4–4.9 per 100,000 live births (Resnick and Kawamoto, 1990; Sesenna et al., in press). Cleft of the lower lip and the mandible was first described by Couronne in 1819; it is a rare congenital anomaly (Armstrong and Waterhouse, 1996; Aygit et al., 1999;

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Fig. 10. Post op CT scan at the age of three and half years shows full development of the permanent tooth bud in the lower and upper jaw except permanent left central incisor and full development of the deciduous teeth except deciduous left central incisor.

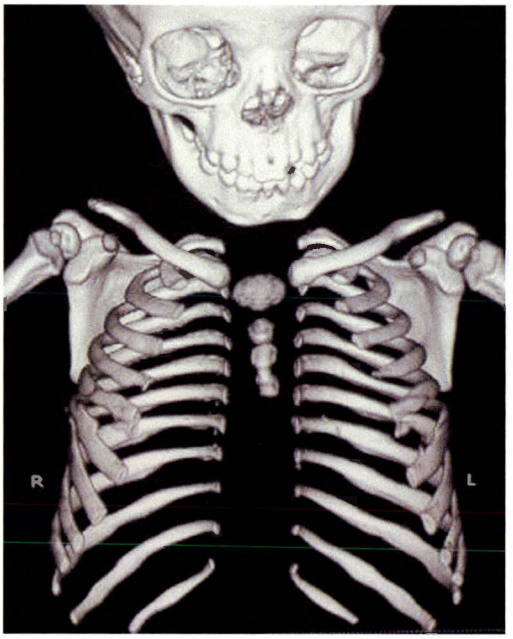


Fig. 11. Post op CT scan of the thorax shows no sign of the clefting or deformity of sternum and clavicle.



Fig. 12. Post op CT scan of hyoid bone shows no defect of clefting.

Gosain and Moore, 1997; Oostrom et al., 1996). The Tessier classification is the current standard for identifying and reporting rare craniofacial clefts (Hou et al., 2011). This rare anomaly is defined as a number 30 cleft according to the Tessier classification (Tessier, 1976). A review of the literature by Erdogan et al. (1989) found 48 patients with a midline cleft of the lower lip and, of these, 37 also involved the mandible. Armstrong and Waterhouse (1996) reported 67 cases with this anomaly. After that only few cases have been published.

There are debates about the development of median mandibular cleft. It is believed that either the fusion defect of the first branchial arch couple or insufficient migration of the mesodermal cells to midline leads to this condition (Gosain and Moore, 1997). Recently, Oostrom et al. (1996) proposed a new embryologic hypothesis to explain the reason for this cleft. According to this hypothesis, there is supposed to be only one branchial arch, in which two mandibular processes develop separately in the early embryonal period. In normal development, these processes connect during the early embryologic period. Secondary cartilages of the mental protuberance form ossicles in the fibrous tissue of the symphysis that will later aid in the conversion of its syndesmosis to a synostosis through endochondral ossification during the first year of life (Bareggi et al., 1994). However, they fail to fuse with each other in patients with this cleft. According to Oostrom et al. any hypoplasia occurring in mandibular processes causes a serious cleft that may involve the entire mandible. However, a failure of development that occurs in the late embryologic period leads to a less severe cleft with involvement of the lip. Based on this theory, it can be proposed that the presented case may have been affected at the early embryologic period, because of the severity of the deformity.

The deformity can range from minor to severe variety and in various combinations. In literature many variations have been described. In minor forms only the lower lip is affected by cleft. Frequently, the cleft extends into the mandibular symphysis. The tongue may be bifid and attached to the cleft alveolar margin (Tiwari, 2000). At times, the tongue may be absent. Armstrong and Waterhouse (1996) reported bifid uvula and ankyloglossia. In severe forms, epiglottis or hyoid may be absent (Henry and Kawamoto, 1990). Thyroid cartilage may be underdeveloped (Henry and Kawamoto, 1990). There may be a midline cervical cord. Strap muscles may be atrophic and represented by fibrous tissue causing bulging of neck during straining (Henry and Kawamoto, 1990). Monroe reported flexion contracture of the neck (Monroe, 1966). There may be a midline dermoid in the neck (Henry and Kawamoto, 1990; Surendran and Varghese, 1991). The clavicles may be widely spaced and manubrium sterni may be bifid (Park and Takushima, 1993; Ibrahim et al., 2002; Seyhan and Kýlýnr, 2002) or absent. There may be presternal tags. Seyhan and Kýlýnr (2002) reported a case with associated bifid sternum with a subcutaneous mass and ventriculo-septal defect. There may be other associated facial anomalies like cleft of upper lip, cleft palate, Pierre-Robin anomaly, mucus pits of lower lip, hemifacial microsomia, fusion of the maxillary and the mandibular alveolar process (Uğurlu et al., 1999) ectopic mass of salivary gland on the dorsum of tongue (Rana et al., 2004) and dermoid cyst of nose or chin, eye and ear deformities (Henry and Kawamoto, 1990). Congenital anomalies of heart (Henry and Kawamoto, 1990; Seyhan and Kýlýnr, 2002), single ventricle, transposition of great vessels (Sherman and Goulian, 1980), hand anomalies (Henry and Kawamoto, 1990; Monroe, 1966) like syndactyly and brachydactyly and anomalies of foot (clubfoot, ectrodactyly) have also been reported. In 1985, Optiz described about midline developmental field in his developmental field concept. According to Midline developmental field, vertebrate midline is not just an imaginary plane dividing right from left half of body but a biologically real entity of profound morphogenetic

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importance in early development. Any dysmorphogenesis in this field easily explain the coexistence of many of the above mentioned malformations found in combination with a midline cleft (Optiz, 1985).

The rarity and variation in severity of this condition are responsible for the lack of consensus on the mode of management and timing of surgical procedures (Rantar, 1984). Millard et al. reported initial correction of a midline cleft of the lower lip at 6 months followed by closure of the mandibular cleft at 8 years of age because early closure of the mandibular defect could cause damage to the tooth buds (Millard et al., 1971, 1979; Armstrong and Waterhouse, 1996). On the other hand, Oostrom et al. said that a careful osteosynthesis of the base of the mandible does not harm these buds and may cause a better maxillomandibular relation in occlusion. They also stated that this timing should depend on the severity of the cleft. Sherman and Goulian (1980) treated median mandibular bone defects at 20 months of age successfully. Armstrong and Waterhouse (1996) treated lower lip cleft deformity at the age of 5 months and mandibular deformity with bone graft to correct occlusal cross bite at the age to 4 years. Chidzonga et al. (1996) followed the same protocol and treated soft tissue deformity at 1 year and mandibular segment fixed with bone graft to correct occlusal cross bite at the age of 19 months. Oostrom et al. (1996) had approximated the two end of mandible with absorbable sutures in order to facilitate closure of skin at 3 month of age and planned to close the mandibular gap when the child was about 10 year old in order to preserve the growth of mandible and teeth. Ibrahim et al. (2002) treated a case of median mandibular cleft with large bony defect, two hamartomatous masses on both sides of clefts. A pedicled cartilaginous mass from hamartoma was used to bridge a bone defect in primary repair at the age of 3 months.

Despite of limited clinical experience, we had decided to address both soft and hard tissue defect in early age. During the operation, we found good embryonic cartilage at the margin of both mandibular segments. This cartilage was dissected carefully. We used this cartilage to repair the mandibular osseous defect for better occlusion. After 3 years, bone formation between mandibular segments was without any defect and mandibular union was firm. Deciduous teeth were erupted without any gap in between and in acceptable intercuspal relation to maxillary teeth. Central incisor was missing from both deciduous and permanent dentition on the left side. Growth of mandible was normal as per the chronologic age of patient. Close follow-up is necessary to track further growth of mandible.

4. Conclusion

According to this different approach of simultaneous correction of hard and soft tissue defect, we can recommend this procedure in similar severe symphyseal mandibular cleft. This procedure by which the mandibular osseous defect was repaired resulted in normal anatomical development of the mandible, permanent tooth buds and eruption of deciduous teeth in acceptable occlusion. This normal growth resulted in excellent function such as speech and mastication. We need close follow-up to evaluate the further growth of mandible.

Conflict of interest

None declared.

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TITLE: TESSIER 30 SYMPHYSEAL MANDIBULAR CLEFT: EARLY SIMULTENEOUS SOFT AND HARD TISSUE CORRECTION – A CASE REPORT

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TITLE PAGE: TESSIER 30 SYMPHYSEAL MANDIBULAR CLEFT: EARLY SIMULTENEOUS SOFT AND HARD TISSUE CORRECTION – A CASE REPORT

SUMMARY:

A symphyseal mandibular facial cleft (Tessier-30) is a rare congenital abnormality. Nonunion of bone in the symphysis of the mandible, median cleft of the lower lip and tongue adherence in the midline to the floor of the mouth are the principle features of the anomaly. A satisfactory result can be achieved with early surgical correction of both hard and soft tissue defects in the age of 6 months. More than Three years follow up shows total bony fusion of the symphysis and normal lower lip function. There were only left deciduous central incisor and the ipsilateral tooth bud of the permanent central incisor missing.

Keywords: Symphyseal mandibular cleft, Median mandibular cleft; Tessier-30 cleft

TESSIER 30 SYMPHYSEAL MANDIBULAR CLEFT: EARLY SIMULTENEOUS SOFT AND HARD TISSUE CORRECTION – A CASE REPORT

INTRODUCTION:

Median cleft of the lower lip and mandible is an extremely rare maxillofacial deformity. In the literature, about 65 reported cases have been described (*Oostrom et al.,* 1996). After that only few cases have been published. Embryologically, the mandible develops from the fusion of two mandibular prominences, which are derived from first branchial arch (*Gosain and Moore,* 1997). The symphysis mandible is formed when the embryo is about 25 mm in length and ossifies during the first year postnatally (*Oostrom et al.,* 1996). Merging of paired mandibular prominences produces the lower jaw, lower cheek, and chin regions of the face (*Gosain and Moore,* 1997). Failure of the mandibular prominences to unite in the midline produces a central defect of the lower lip and chin, which is referred to as number 30 cleft by the Tessier classification (*Tessier,* 1976; *Ibrahim et al.,* 2002).

Principle features of Symphyseal mandibular cleft are: 1) complete median cleft of the lower lip with extension of cleft may vary from a simple notch in the vermilion to a complete cleft involving the tongue, lower lip, chin and extending up to cervical region for varying distance. 2) Notching of mandible to complete cleft of mandible allowing independent movements of the mandibular segments. 3) Anomaly of tongue including bifid tongue and tongue tie. 4) Associated features like, lack of hyoid bone, thyroid cartilage and even manubrium sterni.

In this report, we present a complex case of an extremely large median mandibular cleft extending up to hyoid region with a complete cleft of mandible and ankyloglossia. The accepted treatment protocol on the basis of limited clinical experience is primary soft-tissue reconstruction and delay of the bony reconstruction until 8 to 10 years of age (*Armstrong and Waterhouse,* 1996: *Millard et al.,* 1971). We had decided to perform simultaneous repair of soft and hard tissues at an early age. A follow up of more than three years is presented including the development of dentition.

We report a complex symphyseal mandibular cleft case with ankyloglossia, its treatment and more than three years follow-up.

CASE REPORT:

A 1-week-old baby boy was referred to our unit with a median mandibular cleft extending from the lower lip to the hyoid region, cleft of mandible symphysis and ankyloglossia. The baby was the fifth child of healthy parents with no family history of cleft lip or cleft palate or other congenital abnormalities. The pregnancy was uneventful, and the child was vaginally delivered at full term. The history of the patient revealed that there was no exposure of the mother to radiation and teratogens during pregnancy. There was no consanguinity between family members either.

On physical examination, a complete cleft located at the midline(Fig. 1 & 2) extending through the whole lower lip to the region of hyoid bone, associated with the involvement of skin, mucosa, muscle, and bone allowing independent movement of the mandibular segments, which were approximately 1.5 cm apart(Fig. 3). Moreover, the tongue adhered to the floor of the mouth (Ankyloglossia). The contour of the upper face was normal. This deformity was considered to be a Tessier 30 cleft. There was no abnormality of hyoid bone (Fig. 12), sternum and clavicles (Fig. 11).

SURGICAL PROCEDURE:

When the baby was 6 kg of weight and around 6 month of age, it was decided to repair the cleft lip with release of ankyloglossia and repair of bony defect. The operation was carried out with naso-endotracheal intubation. An incision was made along the margins of the cleft lip extending over skin, white roll, vermilion and mucosa over lip and mandibular segment (Fig. 2). Dissection was done to separate skin, muscle and mucosa. Through this incision, the mandibular defect was exposed (Fig. 3). Mucoperichondrium was elevated from the cartilage over the alveolar portion of mandibular segment. The cartilage was identified on both the end of mandibular segments. Both mandibular segments were fixed at the base of mandible with 1-0 Vicryl sutures on both sides (Fig. 4). We used strong suture instead of wire and plate because it may extend over the mandibular stump and damage tooth bud. Tongue was released from the floor of the mouth (Fig. 5). The soft-tissue coverage of this mandibular segment and the floor of the mouth were provided with the mucoperichondrial flap. The lower lip was reconstructed in

anatomical layers with two big Z-plasty one at the chin and another below the white roll (Fig. 6). During the postoperative period, the patient did not show any sign of infection. Surgical wound healing occurred without any problems. All sutures were taken out on the 7th postoperative day. After 6 months, there was no mouth incompetency such as drooling, no aspiration of fluid and mandibular segments were stable on manipulation (Fig. 7). Deciduous teeth were not erupted during this time. CT scan was done 3 years later to re-evaluate the mandibular union (Fig 9). Divided anterior nasal spine was the only possible sign of a maxillary median cleft. We found central incisor was missing from deciduous and permanent on left side. Deciduous dentition was without diastema. All tooth buds for permanent teeth were present except lower left central incisor (Fig. 10). Bone formation between mandibular segments was seen without any defect. Mandibular growth was normal.

DISCUSSION:

Cleft of the lower lip and the mandible was first described by Couronne in 1819; it is a rare congenital anomaly (*Armstrong and Waterhouse,* 1996; *Aygit et al.,* 1999; *Gosain and Moore,* 1997; *Oostrom et al.,* 1996). This anomaly is defined as a number 30 cleft according to the Tessier classification (*Tessier,* 1976). A review of the literature by *Erdogan et al.* in 1989 found 48 patients with a midline cleft of the lower lip and, of these, 37 also involved the mandible. *Armstrong and Waterhouse* reported 67 cases with this anomaly in 1996. After that only few cases have been published.

There are debates about the development of median mandibular cleft. It is believed that either the fusion defect of the first branchial arch couple or insufficient migration of the mesodermal cells to midline leads to this condition (*Gosain and Moore,* 1997). Recently, *Oostrom et al.* proposed a new embryologic hypothesis to explain the reason for this cleft (*Oostrom et al.,* 1996). According to this hypothesis, there is supposed to be only one branchial arch, in which two mandibular processes develop separately in the early embryonal period. In normal development, these processes connect during the early embryologic period. Secondary cartilages of the mental protuberance form ossicles in the fibrous tissue of the symphysis that will later aid in the conversion of its syndesmosis to a synostosis through endochondral ossification during the first year of life (*Bareggi et al.,* 1994). However, they fail to fuse

with each other in patients with this cleft. According to *Oostrom et al.* any hypoplasia occurring in mandibular processes causes a serious cleft that may involve the entire mandible. However, a failure of development that occurs in the late embryologic period leads to a less severe cleft with involvement of the lip. Based on this theory, it can be proposed that the presented case may have been affected at the early embryologic period, because of the severity of the deformity.

The deformity can range from minor to severe variety and in various combinations. In literature many variations have been described. In minor forms only the lower lip is affected by cleft. Frequently, the cleft extends into the mandibular symphysis. The tongue may be bifid and attached to the cleft alveolar margin (*Tiwari,* 2000). At times, the tongue may be absent. *Armstrong and Waterhouse* in 1996 reported bifid uvula and ankyloglossia. In severe forms, epiglottis or hyoid may be absent (*Henry and Kawamoto,* 1990). Thyroid cartilage may be underdeveloped (*Henry and Kawamoto,* 1990). There may be a midline cervical cord. Strap muscles may be atrophic and represented by fibrous tissue causing bulging of neck during straining (*Henry and Kawamoto,* 1990). Monroe reported flexion contracture of the neck (*Monroe,* 1966). There may be a midline dermoid in the neck (*Henry and Kawamoto,* 1990; *Surendran and Varghese,* 1980). The clavicles may be widely spaced and manubrium sterni may be bifid (*Park and Takushima,* 1993, *Ibrahim et al.,* 2002; *Seyhan and Kýlýnr,* 2002) or absent. There may be presternal tags. *Seyhan and Kýlýnr* reported a case with associated bifid sternum with a subcutaneous mass and ventriculo-septal defect (*Seyhan and Kýlýnr,* 2002). There may be other associated facial anomalies like cleft of upper lip, cleft palate, Pierre-Robin anomaly, mucus pits of lower lip, hemifacial microsomia, fusion of the maxillary and the mandibular alveolar process (*Uğurlu et al.,* 1999) ectopic mass of salivary gland on the dorsum of tongue (*Rana et al,* 2004) and dermoid cyst of nose or chin, eye and ear deformities (*Henry and Kawamoto,* 1990). Congenital anomalies of heart (*Henry and Kawamoto,* 1990; *Seyhan and Kýlýnr,* 2002), single ventricle, transposition of great vessels (*Sherman and Goulian,* 1980), hand anomalies (*Henry and Kawamoto,* 1990; *Monroe,* 1966) like syndactyly and brachydactyly and anomalies of foot (clubfoot, ectrodactyly) have also been reported.

The rarity and variation in severity of this condition are responsible for the lack of consensus on the mode of management and timing of surgical procedures (*Rantar,* 1984). *Millard et al.* reported initial

correction of a midline cleft of the lower lip at 6 months followed by closure of the mandibular cleft at 8 years of age because early closure of the mandibular defect could cause damage to the tooth buds (*Millard et al.,* 1971; *Millard et al.,* 1979; *Armstrong and Waterhouse,* 1996). On the other hand, *Oostrom et al.* said that a careful osteosynthesis of the base of the mandible does not harm these buds and may cause a better maxillomandibular relation in occlusion. They also stated that this timing should depend on the severity of the cleft. *Sherman and Goulian* treated median mandibular bone defects at 20 months of age successfully (*Sherman and Goulian,* 1980). *Armstrong and Waterhouse* treated lower lip cleft deformity at the age of 5 months and mandibular deformity with bone graft to correct occlusal cross bite at the age to 4 years (*Armstrong and Waterhouse,* 1996). *Chidzonga et al.* followed the same protocol and treated soft tissue deformity at 1 year and mandibular segment fixed with bone graft to correct occlusal cross bite at the age of 19 months (*Chidzonga et al.,* 1996). *Oostrom et al.* had approximated the two end of mandible with absorbable sutures in order to facilitate closure of skin at 3 month of age and planned to close the mandibular gap when the child was about 10 year old in order to preserve the growth of mandible and teeth (*Oostrom et al.,* 1996). *Ibrahim et al* treated a case of median mandibular cleft with large bony defect, two hamartomatous masses on both sides of clefts. A pedicled cartilaginous mass from hamartoma was used to bridge a bone defect in primary repair at the age of 3 months (*Ibrahim et al.,* 2002).

Despite of limited clinical experience, we had decided to address both soft and hard tissue defect in early age. During the operation, we found good embryonic cartilage at the margin of both mandibular segments. This cartilage was dissected carefully. We used this cartilage to repair the mandibular osseous defect for better occlusion. After 3 years, bone formation between mandibular segments was without any defect and mandibular union was firm. Deciduous teeth were erupted without any gap in between and in acceptable intercuspal relation to maxillary teeth. Central incisor was missing from both deciduous and permanent dentition on the left side. Growth of mandible was normal as per the chronologic age of patient. Close follow-up is necessary to track further growth of mandible.

CONCLUSION

According to this different approach of simultaneous correction of hard and soft tissue defect, we can recommend this procedure in similar severe symphyseal mandibular cleft. This procedure by which the mandibular osseous defect was repaired resulted in normal anatomical development of the mandible, permanent tooth buds and eruption of deciduous teeth in acceptable occlusion. This normal growth resulted in excellent function such as speech and mastication. We need close follow-up to evaluate the further growth of mandible.

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PHOTOGRAPHS:

Fig.1: 1 week old baby boy having median soft and bony mandibular cleft.

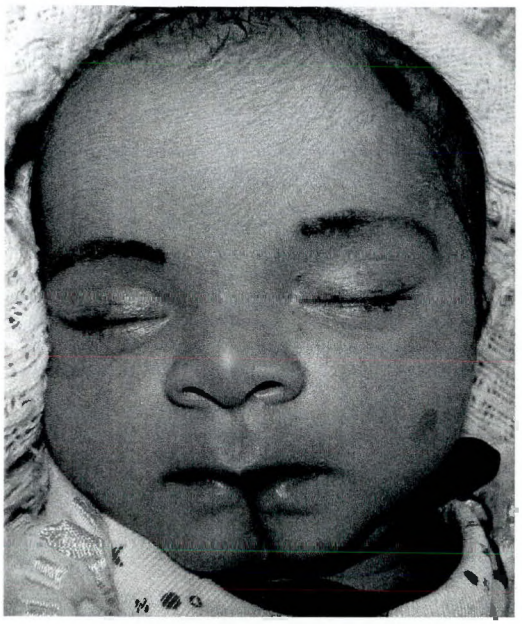


Fig.2: Marking of the incision and excision of the soft tissue covering mandibular defect

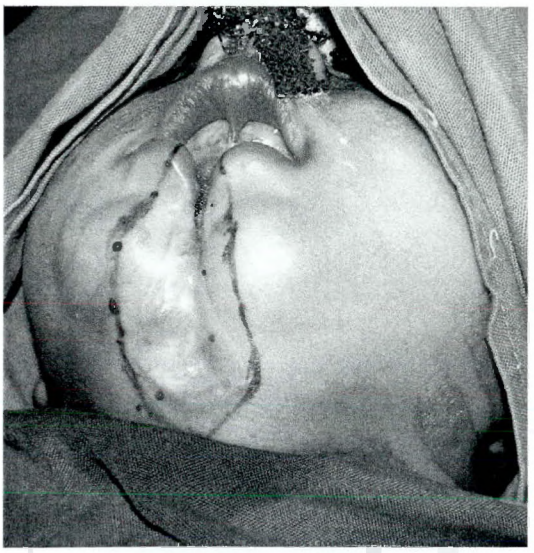


Fig.3: Exposing mandibular segments. (Arrow points to the cartilage stumps of mandibular segments being 1.5 cm apart. Tongue is fixed to the tissue between the stumps and the floor of the mouth)

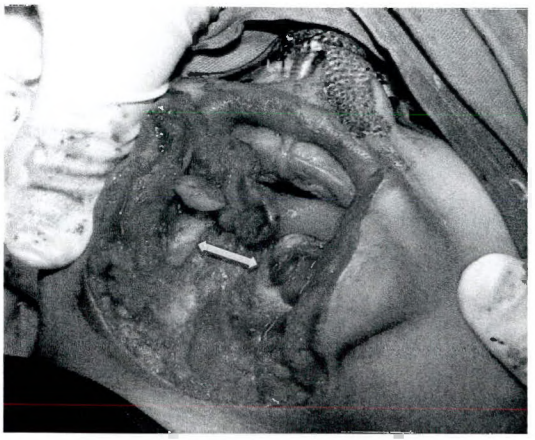


Fig.4: Fixation of cartilaginous stump with two 1-0 Vicryl sutures (Arrow). This cartilage has truly transformed in to bone three years later.

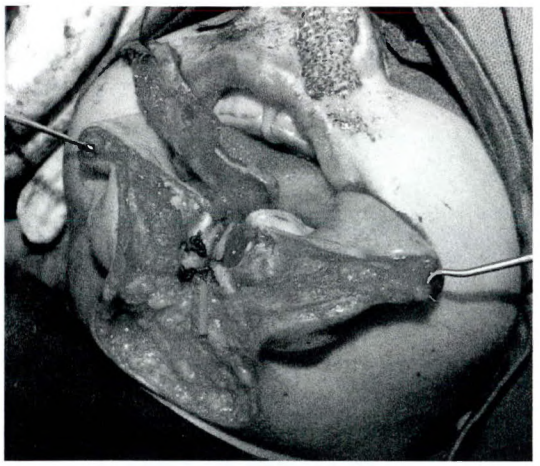


Fig.5: Tongue which was fixed to floor of the mouth and mandibular stump was released and mobilized.

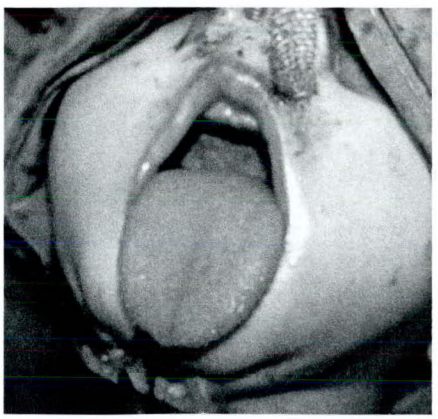


Fig.6: Skin and mucosa closure with z-plasty at chin and below white roll.



Fig.7: 6 Months Follow up with good aesthetic outcome. No deciduous teeth were erupted.

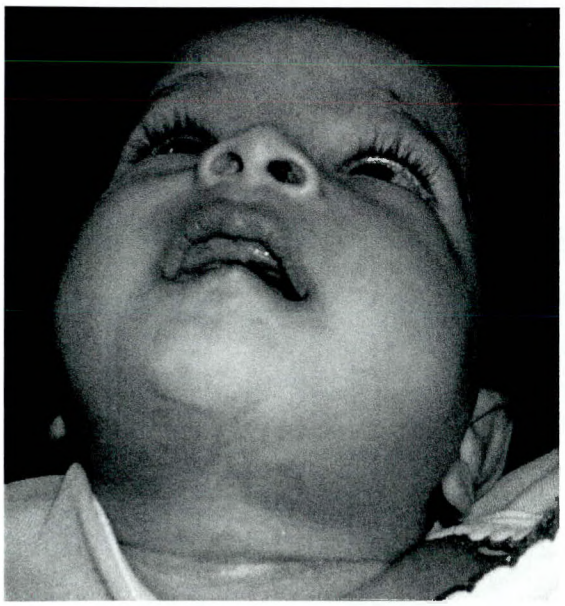


Fig.8: 3 years follow up with good aesthetic result and erupted teeth.

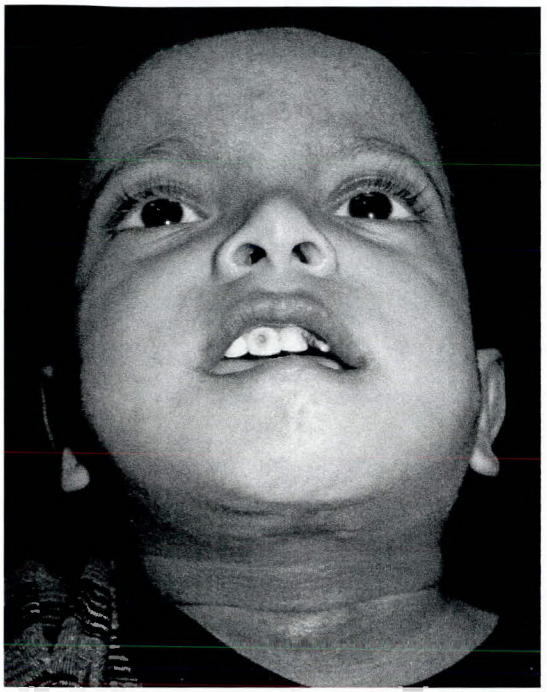


Fig.9: Post op CT scan at age three and half years shows bone formation without any defect between mandibular segments with normal mandibular growth. Anterior nasal spine is divided.

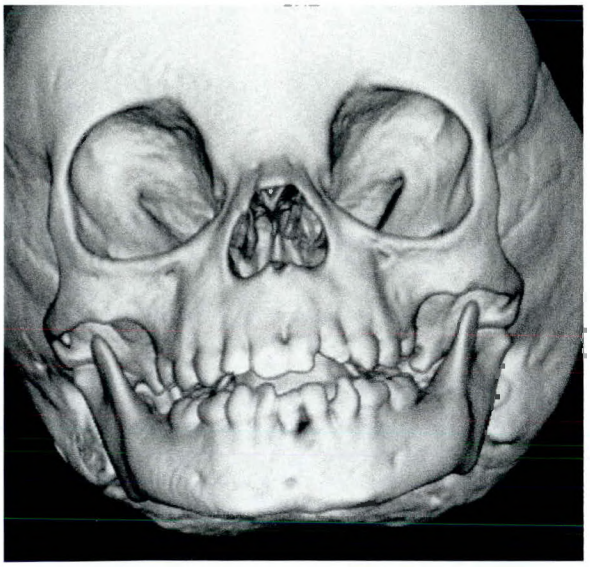


Fig.10: Post op CT Scan at the age of three and half years shows full development of the permanent tooth bud in the lower and upper jaw except permanent left central incisor and full development of the deciduous teeth except deciduous left central incisor.

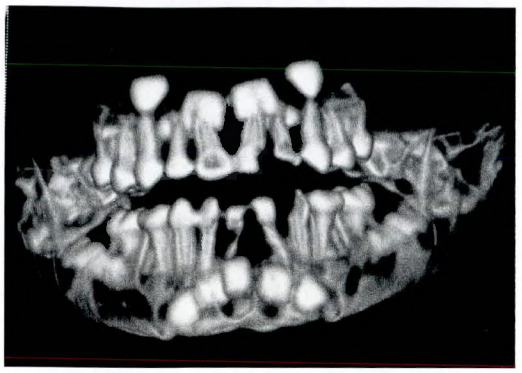


Fig.11: Post op CT Scan of the thorax shows no sign of the clefting or deformity of sternum and clavicle.



Fig.12: Post op CT Scan of Hyoid bone shows no defect of clefting.

