British Journal of Material Sciences and Technology

Journal homepage: www.mcmed.us/journal/bjmst

CLEFT LIP AND PALATE

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Article Info

Received 22/05/2015
Revised 08/06/2015
Accepted 16/06/2015

Key words:- Clefts, Speech, Therapy, Yeaus, Lip, Palate.

ABSTRACT

Cleft in simple language means an empty space. Cleft is not something that is formed so much as it is something that doesn't form. Everyone began life with a Cleft for 799 out of 800 of us, the cleft fuses before birth but for that one in 800 of us, it fails. So the discussion is not about something that happens so much as something that fails to happen. The disappointment in case of cleft patients is obvious due to functional impairments like problems in eating, chewing, swallowing, speech etc that makes him crippled. On second thought its not the functional impairment, which is crippling, it is the psychological stigma, which him for a lifetime and more so the patient's own mirror doesn't approve of what it sees. The present article presents a review on Cleft lip & Palate and its management.

INTRODUCTION

The biologic science has suffered a great metamorphosis. The successful rehabilitation of the cleft palate patient presents a scientific and humanitarian challenge of every great proportion. So complex an enterprise requires the integration of the most mature knowledge, judgment and experience, in the consideration of our individual responsibilities in this co-operative task. In the past, the record of salvage has not been good and the outlook of the group to be able to live comparatively normal life has been discouraging [1, 2]. The results obtained in the rehabilitation of some individuals in the group have been outstanding but whether a baby born with cleft palate will receive proper care and optimum results seem too largely upon a chance. There has been no planning for the group as a whole, and the more fortunate ones, the ones, who will receive all that science has to offer, have by chance or by force of circumstances fallen into the right hands at the right time.

These examples of what can be accomplished for the cleft patient should give us no peace of mind until the necessary services are made available to all of the Cleft is totally, perfectly and absolutely treatable be it in functional impairment or esthetic part of it. Its treatment calls for a teamwork, which includes pediatrician, gynecologists, surgeons, orthodontist, prosthodontist, speech therapist and social worker etc.

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Historical Perspectives

The cleft anomaly may be more ancient than man itself but early evidence is sparse. It was considered as a shadow of evil. This “evil's child” was a mark of disgrace and infancy for the family. With the development of science it came into knowledge that cleft is caused by miscarriage of nature's plans. There are records of attempts to repair hair lip as early as 1000 A.D. French Surgeon Pare described the making of obturator to fill the cavity of palate in 1561. Obturator were the mode of treatment for another two centuries when one of the first operation to repair a cleft of the palate was performed surgically by Le Monnier, a french dentist in 1764, mainly to facilitate eating and drinking [3].

During 19th century, few European countries opened centers for the treatment of cleft palate and many differing methods were described to repair the cleft using:

(1) Median Suture; (2) Various types of flaps to cover or occlude the cleft; or (3) Compression method to narrow the cleft before suture.

Many of these methods were indigenous, but were in general means of covering or closing the cleft with no considerations to normal anatomy and function of the palate, nor the restoration of normal muscle activity in either the palate or nasopharynx.

Probably the first to consider the postoperative speech was Passavant, who in 1861, attempted various surgical methods directly designed to assist speech. The following years he described a cushion or ridge which appeared on the posterior pharyngeal wall during phonation. He thereafter devised several types of pharyngoplasty to assist speech. However, this operation produced little improvement in speech. It was during World War I that plastic surgery was developed by certain surgeon, thereafter they directed their skills from victims of war to repair of clefts. Names which are remembered are Harold Gillis, and Kilner in London Victor Veau in Paris, William Wardrill in New Castle and Dorrance in USA [4].

Various operative procedures were devised and described by many surgeons during 1930's and 1940's Veau, Wardill and Dorrance used V<i1;OUS methods to elongate the soft palate, sometime described as PUSH BACK operation. Differing types of pharynyoplarties were described, designed to compensate for a short soft palate, by Wardill, Browne and Hynes. Many new techniques were introduced, old techniques were modified and some new attempts like bone grafting were made to tackle the condition during this era.

Mysak in 1966 described speech mechanism as a complex multiple closed loop system, and suggested that learning and speaking by human organisms were the basis of learned skills which became stabilized, through experience leaving the higher centers of brain to engage in more intellectual pursuits.

Emotional reactions, covering the psychologies aspects, to children born with malformation have been describing the influence of obstetric circumstance on later development. Stratton discusses at length a transactional model of mother child relationship. With the advancement of techniques and introduction of newer and newer materials the cleft palate rehabilitation is today not at all today.

Classification

Many systems have been offered but none has been universally accepted because of language differences, in accuracies, omissions and lack of simplicity. For the sake of uniformity and to facilitate communication and comparison, David and Ritchie in 1922 submitted a grouping that proved to best and followed for many years.

Veau's Classification

In 1931, Veau Classified degrees of deformity by a simple numerical scale.

Group I : Cleft of the soft palate
Group II : Cleft of Soft and hard palate.
Group III : Unilateral complete Cleft of the alveolus hard and soft palate.
Group IV : Bi lateral complete Cleft of alveolus, hard and soft palate.

Although he ignored clefts of the lip and alveolus completely, his classification had many ardent followers such as Kilner and still is referred to often even today [5].

Internationally Approved Classification

International confederation for plastic and reconstructive surgery announced, on basis of embryological principles, a classification of Clefts of the tip, Alveolus and Palate.

Group I : **Clefts of anterior (Primary) Palate**
(A) LIP : Right and/or left
(B) Alveolus : Right and/or left

Group II : **Cleft of anterior and Posterior (primary and secondary) Palate**

(a) Lip right and/or left
(b) Alveolus right and/or left
(c) Hard Palate right and/or left

Group III Cleft of Posterior (Secondary) Palate
(a) Hard Palate : right and/or left
(b) Soft Palate : medial for further subdivisions the term total and partial should be used [6].

Management and Rehabilitation of Cleft Patient

H.K. Cooper is early 1930, made what is segregated as a landmark observation. He said in effect that the clinical care of the child with a cleft lip or palate must be in the hands of a team of specialists who will coordinate their diagnoses and treatment, as well as their interpretations of child's status and progress, with the passage of time. Rehabilitation is progressive, not static; each age group period has its unique problems of adjustments. Total habilitation of the child with the cleft is so complex that many different aspects must be brought into union by as many different specialists, working together in harmony. The use of the word 'team' connotes togetherness and orientation to a single goal, with the child and the family as the focus.

The teamwork starts with the gynaecologists and pediatricians, who are the ones, get first awareness of cleft or other orofacial anomalies. If there is a family history the geinetist is already ready with secured pedigree pediatrician and nurse first talk to distraught parents, discussion should be coordinated by geinetist and social worker. In the first few months after birth, pediatrician is health advisor to child and mother, discuss feeding problems by the time surgeon and dental specialist work together and discuss tooth arch bone relationships first evaluation of soft palate in terms of future competency. Upon approval from pediatrician, surgeon performs his

first surgery and as the age proceeds orthodontist, prosthodontists, speech pathologist, social worker play their part. Child may have to undergo different surgeries, correction of malocclusion, use of speech bulb and obturators, speech therapy, all performed by the specialists of their field

Feeding of the Neonate

An infant with a cleft requires special nursing consideration during feeding. Adequate nutrition is not only necessary for growth and development but also for the infant preparation for the first surgery. Depending upon type and severity of the cleft, a variety of feeding devices are available infants with an isolated cleft lip most often feed normally with a bottle or breast. A broad base nipple will work will with a regular bottle to provide a seal. The feeding problem is most significant in cleft palate with or without cleft lip. Cleft palate infants generate a negative pressure when sucking and tire easily, resulting in unfinished feeding. Soft premature nipples conform better to the palatal defect than do regular hard nipples, which can improve sucking. Crosscut nipples allow easier flow of formula, thus decreasing the strain on child. Longer nipples are also beneficial as they deliver the formula posterior to the defect. The squeeze bottle has helped significantly to decrease to squeeze and control the flow of the formula into the month. This is especially helpful when sucking reflex is weak [7].

A bulb syringe can also be used to deliver the formula without requiring effort from the child. After a feeding technique has been selected, several modifications may be required to suit the individual situation feeding in a semi upright position reducing regurgitation. For an infant with a Cleft palate, feeding usually requires more time and it should be unhurried to the mother till the child adjust to the technique. If feeding usually require, more than 45 minutes, than child must be working too hard and the technique may need to be reevaluated Regular consultation of nutritionist and occupational therapist is necessary.

Surgical Management

The surgeon requires imagination for the must look into the puzzle of a Cleft palate subject beyond surgical stages, growth, heredity and time to a specific ideal normal end result. With this picture as a transparency in his minds eye, superimposed over Cleft's patient, the surgeon is abetted in the roosting out and filling together of the pieces of puzzle. Only with the normal as a guide is it possible to evaluate what is present in this area of the cleft in order to utilize to the best advantage what has to be created and what is wanted. Surgeon after a thorough examination and accurate diagnosis, must decide when and how to operate the case. Surgical procedures for correction of cleft lip and cleft palate are always elective. The timing and the procedures involved in surgical repair of lip (Chelorrhaphy) and surgical repair of palate (Palatorrhaphy) being different, so has to be discussed differently.

Cheilorrhaphy

Surgery is usually undertaken at 3 weeks to 3 months of age, when a full teen newborn infant has regained original birth weight or approximates 10 pound and hemoglobin 10 gm%. This allows adequate time for manifestation of other possible congenital anomalies of greater significance than the oral cleft.

Surgical Anatomy and Goals

Cleft of upper lip entails loss of the important orbicularis oris muscle complex. Without the control of this sphincter group of muscles, The developing parts of the cleft maxilla deviate to accentuate the alveolar ridge. Cleft when it is seen at the time of birth.

Premaxilla and prolabium are found deviated away from the cleft in unilateral cases and found to project anteriorly in bilateral clefts of lip and palate. Blood supply to all structures is excellent. Surgical correction of lip striver to attain a symmetric well contoured lip with preservation of all functional land marks and minimal scar tissue in the result. Since cleft margins are composed of atrophic tissues, they must be prepared to provide adequate muscle layers and full thickness structural defamation. All tissues of quality are preserved and utilize in the operation. Every technique has its own advantages and disadvantages the choice of technique depends on surgeon's preference and type of cleft.

Common procedures followed today are

1. Hard Palate
   - Von langenbeck bipedicled flap
   - Pushback Vean - Wardill - Kilner procedure
   - Vamer flaps [8].
2. Soft palate
   - layered closure
   - Intravelar veloplasty
   - Furlow's Zplasty

Controversies in Clefts

The field of cleft lip and palate rehabilitation abounds with controversy, for which there are several reasons. Controversies exist at various rehabilitative procedures. Here is a brief description of common controversies in this field.

Feeding

Feeding in cleft patient is commonly assisted either by the modification to the bottle or use of palatal obturator (or feeding palate) which closes the defect and allows the infant to generate sufficient negative pressure. Palatal obturator are generally effective but may involve further cost and visits for making the apparatus and enlarging it as the child grows, another problem associated is inability to maintain the hygiene. The child is best fed at a 45-degree angle to help prevent food from entering the

nose. Breast milk is the best and the mother who is willing to expend the extra effort, can be obtained with a breast pump.

Lip Repair Timing

The lip is usually repaired at 2-3 months of age. in an infant who is triving and in the absence of other more processing medical problems. By 3 months of age the anaesthetic risks are reduced as fatal physiology-has been replaced by that of a normal infant. It should be mentioned that these principles were ~stablished at a time when paediatric anaesthesia was riskier improved anaesthetic techniques permit earlier lip and palate repair, if indicated. - Neonatal repair:' in some centers lip and palate as a single stage is performed by a few surgeon. However majority of surgeons operate on these children at 2-3 months of age. The anaesthetic risks of operating in the neonate for a non emergent condition outweighs the possible advantages of healing with less scarring and avoidance of social embarrassment for the parent. Until clear advantages have been demonstrated with neonated repair (such as improved maternal boundary or. reduced scarring) it's preferred to wait until 2-3 months.

Palatal Repair Timing

The most important consideration influencing the time of closure of the palatal cleft are the onset of speech development and the influence of early surgery on facial growth. Ideally the palatal cleft should be closed prior to the onset of speech development. However, many believe that the earlier the repair, the great~r the negative impact on facial growth (and the greater the degree of technical difficult).

Clinical are laboratory studies have demonstrated that lip repair alone can retard facial growth. Palatal surgery in childhood does impair facial growth, but no difference have been shown in the degree of underdevelopment of the maxilla among children operated on a differed eyes according to different protocols, early repair 3-9 months, delayed repair 12-24 months, later repair at 2-5 years, or early soft palate repair at 3-9 months with delayed had palate repair up to 15 year significantly better speech results have been obtained when repaired before 1 year of age. A lower fistula rate and more named lip and nose anatomy have also been reported, and these benefits offset the disadvantages of increased technical difficulty and a layer operation time. Additional advantages of early surgery are earlier protection of eustachian tube thus reduced incidence of middle ear effusion.

CONCLUSION

Whatever improvement in management that continuing research may bring difficult social circumstances throughout the world will prevent any single regime of treatment from proving to be universally acceptable. These are wide difference from place to place in availability of resources and of the various professionals who should ideally be involved in the case of the patient with a cleft palate. These differences are a healthy scepticism and individuality will provide contributing studies for lively discussion along those working in his facility field. These will lead to an ever greater understanding of the many problems affecting the child born with a cleft of the palate, who will benefit from the resulting improvement ill care.

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