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Feed Intolerance in Very Preterm vs Moderate Preterm Newborns in Our Setup

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Abstract **Original Research Article**

Background*:** It is hopeful procedure for helpless patient when injury is so severe that amputation of a limb is going to be mandatory for many reasons even for life threatening conditions. lt is also beneficial for the patients in the prevention of infection, bone necrosis and also for early mobilization. Success of muscle flap coverage in Gustilo type lll B open fracture of tibia-fibula will establish it as an effective standard treatment in our country. So early referral as well as early stabilization of fracture according to future plan of flap coverage will come in practice. Hence this procedure will save many limbs as well as will reduce many disabilities. ***Objective: To assess the effectiveness of muscle flap (Gastrocnemius, soleus or combined) for the coverage of wound in open tibia-fibula fracture Gustilo- type lllB. ***Methodology:*** This experimental surgical procedure was done on patients of Gustilo type- lllB open fracture Tibia and fibula in Orthopaedics and Traumatology department of Dhaka Medical College hospital and National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR). During the period of July 2006 to June 2008. This study was done on 20 patients. It was a Purposive sampling method following preset inclusion and exclusion criteria. ***Results:*** This prospective study on soft tissue coverage by Gastrocnemius and soleus flap in management of open Gustilo type lllB fractures of upper Two third of tibia fibula was carried out at Department of Orthopaedics and Traumatology, Dhaka Medical College and National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka during the period of July 2006 to June 2008. This study was done on 20 patients. Age incidence in this series ranged from 16 to 60 years with a mean age were 34.25 and32.65 years respectively. Among them maximum (50%) was between the age group 16 to 30 years. Male patients (90%).Motor vehicle accident was the most common cause of injury (90%). Most common configuration of fracture was comminuted + segmental type (45%). External fixator was used in 65% cases, IM nail in 35% cases. Either Gastrocnemius muscle flap or Soleus muscle flap each was done in 35% cases; both Gastrocnemius +soleus were done in 30% cases. Mean area covered by Gastrocnemius 36.14 cm2 +/- 3.51 cm Soleus 28 .88 cm2 +/-3.67 cm Gastrosolieus 53.57 cm2+/- 10.26 cm. Total follow up were <6 months to >12 months. Medium follow up period were 7.83 months. lnter Quartile Range (IQR) was 6 months to 11.25 months. In 60% Gases different type of complications occur. Among complications 45% was sagging of flap 20% was soft tissue infection 10% was pin tract infection. Regarding hospital stay21.67days (11027) was the mean period in cases where Hap, coverage was done within 10 days. Mean hospital stay 62.63(i33_29) days in cases where flap surgery was delayed. Muscle coverage done within 10 days of injury showing significant percentage of satisfactory outcome ($p<0.05$). No tetanus or gas gangrene developed among the patients in this series. In this series 15 cases (75%) patients achieved satisfactory outcome whereas 5cases (25%) patients could not achieved satisfactory outcome. ***Conclusion:*** Open fracture shaft of tibia and fibula are common injuries which are considered as surgical emergency. Early wound toileting, as adequate debridement and soft tissue coverage by Gastrocnemius and soleus flap with fracture fixation by locally made A.O. External fixator or intramedullary nail are important for prevention and elimination of infection and union of fracture. Soft tissue coverage of the exposed bone in Gustilo type lllB fractures of upper two third of tibia fibula can be satisfactorily done by Gastrocnemius and soleus flap and acceptable results can be obtained if the flap is done within 10 days' time after injury.

Keywords: Muscle flap, Gustilo type-IllB, Open fracture.

INTRODUCTION

Neonatal loss of life is excessive in our region and it incorporates 60% of overall Under-five mortality[1]. So to acquire MDG-four we should reduce neonatal death. The Lancet collection on neonatal fitness reported that preterm delivery immediately causes 28% of neonatal deaths.[2] Prematurity and its hassle is the essential reason of neonatal dying in our set up, and stocks round forty five% of neonatal loss of life. Premature toddlers are liable to broaden many headaches. One of the commonplace headaches is Feeding Intolerance (FI). Feeding intolerance can be attributed to the immaturity of gastrointestinal motility, three, four as small intestinal motility and segment-[3] interest of the migrating motor complicated (MMC) are more immature in preterm infants, mainly those with a gestational age of less than 32 weeks. Three, five Gastrointestinal motility is inspired via motilin, a 22 amino-acid peptide produced through the enterochromaffin cells of the duodenal and jejunal mucosa.[6] Gastric emptying, in specific, is depending on co-ordination among the motor sports of the gastric antrum and duodenum. Preterm infants often have difficulty in tolerating oral feeds because of immaturity of mechanical and hormonal control of their gastrointestinal system.[3] Feed tolerance requires co-ordinated caudal intestinal transit of food. The clusters of segment three migrating motor complexes (MMC) that propagate food are associated with a two- to fourfold boom in plasma motilin tiers.[7] But the affiliation among motilin, MMCs and feed tolerance, however, is unclear in preterm infants. Even even though the numbers of MMCs are decreased in preterm infants of much less than 32 wk gestation[8] fetuses by using week 20 of gestation, show intestinal distribution of motilin just like that during adults. Motilin degrees of fasting preterm toddlers also are similar to those of term babies, who not often exhibit the stages of feeding intolerance characteristic of premature toddlers.[5]

It is likewise noted that fetal intestine is structurally mature by using 25 weeks of gestation and able to digesting and absorbing milk feeds, motor pastime develops greater slowly and can restrict the tolerance to enteral feeds.[9] FI regularly needs prolong parenteral vitamins which predisposes nosocomial infections, hepatic dysfunction and lengthen hospitalization.[10], eleven Though FI is a commonplace hassle, literature incorporate little facts about the have an impact on of prematurity on feeding intolerance. There is also scarcity of facts concerning the occurrence of feeding intolerance among preterm babies and while the greater preterm toddlers develop extra common feeding intolerance but to be determined.

OBJECTIVES

Firstly to know the incidence of feeding intolerance in premature babies. Secondly, to To compare the prevalence of feeding intolerance between agencies of preterm (28-32wks and>32 - 36wks). Thirdly, to examine the time taken for full enteral feeding among the groups.

Fourthly, association of feeding intolerance with other conditions. (eg Suspected sepsis, Phototherapy and so forth.)

Type of study - prospective, observational
Place of study - NICU Adesh institute of medical sciences & research, Punjab
Period of study - July 2018 to june 2019
Sample size - 240

Cases were taken by consecutive sampling. 100 Preterm in Group-1, (28-32wks) and140 preterm in Group-2(>32-36 wks)

INCLUSION CRITERIA

Feeding not started or
Feeding started but reached less than 30%

EXCLUSION CRITERIA

- Structural abnormalities of GI tract.
- Respiratory failure with mechanical ventilation
- Severe birth asphyxia
- Congenital cyanotic heart disease
- If feeding started and >30% of daily requirement was reached at enrolment.
- NEC stage II/III vii) Proven sepsis
- IUGR Procedure

All apparently solid preterm babies (28 to 36 wks) admitted to NICU changed into blanketed in the have a look at. Gestational age becomes assessed from history of closing menstrual period or first trimester ultrasonography. If those records had been unavailable handiest then New Ballard Score become done. The toddlers had been stratified on enrollment into institution-1(28 to 32 weeks) and organization-2 (>32 to 36 weeks). Then they had been accompanied up for up to the age of full feeding and very last outcome. Feeding started out in each agency of toddlers after they had been clinically strong andfeeds had been given as intermittent boluses each 2 hourly. The neonates in each agency had been acquired expressed breast milk (mother's milkor different mom milk). Feeds were generally started at 10–20ml/kg/day. Feeding improved via 10–20ml/kg every 24 hourly until a maximumof 150ml/ kg/day become achieved. Parenteral nutrition turned into commenced from the primary day of admission and discontinued whilst the infant obtained120ml/kg of milk in line with day. Gastric residuals have been measured every 6hours earlier than the feed. Full enteral feeding was described as receivingmilk as a good deal as 150ml/kg/day. Feeding becomes withheld if FI changed into determined. Feeding changed into resumed 6 to 24 hours after the problem resolved. Thevariety of episodes of vomiting,

gastric residuals of >50% of theprevious 6 h feeds, and of the variety of incidence of abdominal dissention turned into recorded.

Case definitions

Feeding intolerance - Some studies have used specific parameters which includes GRV (Gastric Residual Volume) greater than 30% of the previous 6 hours of feeding12 or GRV that turned into identical to or more than preceding feeding [13,14]. The majority of the researchers, however, defined feeding intolerance as the presence of GRV more than 50% of previous feeding [15-19]. We took into consideration FI as.

- GRV > 50% of preceding 6 hrs feed OR
- Vomiting extra than as soon as in 24 hours period OR
- Abdominal distention (clinically) with or without seen bowel loops

N jaundice was taken into consideration while preterm babies evolved jaundice requiring phototherapy consistent with AAP (American Academyof Pediatrics) tenet. Suspected sepsis described as scientific signlethargy, bad feeding, hypo or hyperthermia, less pastime, stomach distension AND Laboratory finding-Leucopenia/leucocytosis, Thrombocytopenia OR Positive CRP/ Procalcitonin>500iu. IDM (Infant of Diabetic Mother)-whilst mother required insulin to manipulate blood glucose.

Then FI and different outcome variables have been located and compared between two organizations. Outcome variables were:

- Frequency of feeding intolerance among study subjects
- The duration required via the infant to acquire full enteral feeding.
- Co-morbid situations and feeding intolerance.

STATISTICAL ANALYSIS

Comparisons for continuous variables were made by using Student's t-check and for specific statistics, $\chi 2$ check and Fisher's genuine check turned into used anyplace relevant. Level of importance became set at p<zero.05.The pc software SPSS; Release 12.Zero (SPSS Inc., Chicago, IL, USA) and Epi info model 3.5.4 become used for statistical evaluation

RESULTS

(Tables 1–3)

Table 2 showed the distribution of co morbid conditions many of the groups. The difference of incidence of those conditions most of the businesses became not statistically widespread.

Table 3 confirmed that Group-1 babies reached complete feeding at 19.8 days (mean) however organization-2 reached complete feeding much in advance eleven.5 days(mean). Difference of means become tested with the aid of t-check and it became full-size (p=0.0001).

Table-1: Mean gestational age and birth weight of two groups

Groups	Mean gestational age	Mean birth weight
Group 1 (n =100)	30.98 wks	1470 gms
Group 2 (n =140)	33.92 wks	2160 gms

Table-2: Feeding intolerance in two groups

Feeding intolerance	Group 1 (n =100)	Group 2 (n=140)
Persent	40	48
Absent	60	92

P value 0.33

Table-3: Difference in postnatal age at full feeding between two groups

Groups	Mean days
Group1 (n=100)	19.5
Group2 (n=140)	11.4

P value – 0.0001

DISCUSSION

In our study we categorized the babies into two groups, group-1 babies were > 28-32 weeks gestational age and group-2 babies were >32-36 weeks. In a recent paper WHO classified the preterm babies into three categories, extreme preterm (<28wks), very preterm (>28- 32 weeks) and moderate preterm (>32-37weeks).20 Many other studies done on feeding intolerance on different population group. SR Jadcherla stratified their study population into three groups that was <28 weeks, 28-32 weeks and >32-35 weeks [21] Aly *et al*. [22] categorized their study subjects into two groups of preterm, ≤32 weeks and >32weeks [22]. We did not include the patients of <28 weeks because their number was less and they used to suffer from some other type of serious conditions. It was also expected that they have more frequent feeding intolerance. Our intension was to see the difference of feeding intolerance among the two preterm groups (very preterm and moderate preterm) who were reasonably stable. Though a lot of study done on feeding intolerance in preterm babies but the methodology they followed was so diverse that we faced difficulties to compare our study with others. A good number of studies done to see the effect of pro kinetic agents on feeding intolerance. Some researchers took their study subjects on the basis of birth weight not the prematurity. Another problem was lacking of a universal definition of feeding into lerance. In a recent Cochrane review of the use of erythromycin in the improvement and/or prevention of feeding intolerance, the authors reported that a meta-analysis was not performed because the

diverse definitions of feeding intolerance made this type of analysis unfeasible [4]. In this study feeding intolerance was observed between two groups of preterm babies (Table 4) Forty percent of very preterm babies had feeding intolerance and 34% of moderate preterm had feeding intolerance. But the difference was not statistically significant. Jadcherla SR conducted a study on impact of prematurity and co-morbidities on feeding milestones in neonates. He found infants >28 weeks GA (i.e. group-2 and group-3) attained successful feeding milestones by similar PMA which was consistent with our study. Table 4 showed the association of feeding intolerance with co-morbid conditions. We have analysed co-morbidities like RDS, suspected sepsis, phototherapy and infant of diabetic mother. Only suspected sepsis had significant association with feeding intolerance (p=0.0003). Other conditions failed to show any significant association with feeding intolerance. This finding was consistent with the study of SR Jadcherla [21] In this study we found the mean age to reach full feeding of group-1 and group-2 were 19.8 days and 11.5 days respectively (Table 5) and the difference was statistically significant (p=0.0001). SB De Mauro and co-workers [22, 23] have done a study on the impact of feeding interval on feeding outcomes in very low birth-weight infants. They found that the preterm babies reach full feeding at 16 days of life. He considered full feeding as 120ml/kg/day and the mean gestational ageof their study subjects were 28.3 weeks. A randomized trial on feeding tolerance in preterm infant showed time to reach full feeding was 13 days [24]. Mean gestational age was of study subjects of that study was 26.8 weeks and they consider 160ml/kg/day as full feeding. Another randomized controlled study on feeding intolerance in preterm infants found the age at full feeding were achieved at 52 days[25]. Their study subjects' mean gestational age at enrolment was 27.5 weeks and full feed regarded as 130ml/kg/day. So there were wide variations in the age at full feeding due to variation in the study subjects gestational age and differences in the definition of full feeding as well as presence of co-morbid conditions.

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