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ORIGINAL ARTICLE

Outcome of Closure of Wide Based Defects by Various Rotational Flaps

MUHAMMAD SOHAIB ANWER[1], FAISAL WAHEED[2], ATTA UR REHMAN KHAN[3], SANA ULLAH[4], NAEEM UL HAQ[5], M.HAROON SARWAR[6]

[1]Associate Prof. Neurosurgery, Sheikh Zayed Hospital, Rahim yar khan
[2]Assistant Prof. Plastic Surgery, Sheikh Zayed Hospital, Rahim yar khan
[3]Assistant Prof. Neurosurgery, Dera Ghazi khan Medical College, Dera ghazi khan
[4]Resident Neurosurgery Deptt. King Edward Medical University/Mayo Hospital, Lahore
[5]Assistant Prof. Neurosurgery, Bacha Khan Medical College, Mardan
[6]Resident Neurosurgery Deptt. King Edward medical University/Mayo Hospital, Lahore
Corresponding author: Muhammad Sohaib Anwer, Associate Prof. Neurosurgery,

ABSTRACT

Aim: To observe the outcome of closure of wide based defects by various rotational flaps for meningomyelocele defects.
Study setting: Neurosurgery Department, Sheikh Zayed Hospital, Rahim yar khan
Duration: From Oct 2018 to Oct 2020,
Methodology: We included 15 patients with wide based myelomeningocele anomalies in the neurosurgery department, Sheikh Zayed Hospital, Rahim yar khan. Age ranged from four days to eight years. The flaw had a diameter of between 8x5cm and 12x8cm. Rotational flaps were used to restore soft tissue defects in all cases.
Result: In this study, we did posterior intercostal artery perforator flap(superiorly based) in 40% patients, double rotation flap (yin yang) in 26.7% patients, superior gluteal artery perforator flap in 20 % patients and z plasty in 13.3 % patients. Regarding complications, 2 (13.3%) individuals had a superficial wound dehiscence. One individual (6.7%) developed necrosis of the distal portion of the flap, which was conventionally handled. Postoperatively, no neurosurgical problem occurred. After an average of 6 months, no patient experienced reappearance or dural sac herniation.
Conclusion: Restoration of large meningomyelocele defects using local rotational flaps is a secure and reliable approach for abnormalities in the lumbosacral region.
Keywords: Meningomyelocele, rotational flaps

INTRODUCTION

The most unpredictable congenital defect in human being is myelomeningocele (MMC). Due to pre-birth evaluation of neural cylinder irregularities, recurrence of MMC is decreasing. It occurs approximately 1 of every 1000 live births[1].

Closure of the massive lumbosacral meningomyelocele presents a significant reconstruction difficulty[2,3].

The objective of the study was to observe the outcome of closure of wide based defects by various rotational flaps for meningomyelocele defects.

METHODOLOGY

Fifteen individuals with wide base meningomyelocele were included in the Neurosurgery Department, Sheikh Zayed Hospital, Rahim Yar Khan after permission from IRB.
Study duration: Two year from Oct 2018 to Oct 2020.
Under general anaesthesia, patients were operated in the prone position. Neurosurgeons repaired the dural defect. Closure of the skin defect was accomplished using accessible neighbouring skin flaps following an assessment of accessible adjacent skin by plastic surgeon.

Local rotational flaps were incorporated to allow for tension-free sealing. Parallel incisions in individuals were used to create posterior intercostal artery perforator flap (superiorly based) in 40% of patients. Secondarily, double rotation flap (yin yang) was used to deal 26.6% of individuals. In 13.3% patients, a double Z-plasty was performed. In 20% individuals, superior gluteal artery perforator flaps were constructed. The defect's dimensions were determined, and the flap's height was increased to 1.5 times the defect's size. Flaps with a posterior base were constructed with a broad base. Maximum perforators at the flap base were preserved to increase the flap's vascularity. The data was analyzed using SPSS software and the descriptive statistics of the variables flap types, regions and complications was calculated considering P value < 0.05.

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RESULTS

The detail of results is given in tables 1,2,3.

Table 1: Types of Flaps

Flaps	n	%age
posterior intercostal perforator flap	6	40
Double rotation Flap	4	26.7
Superior gluteal artery perforator flaps	3	20.0
Double Z plasty	2	13.3
Total	15	100

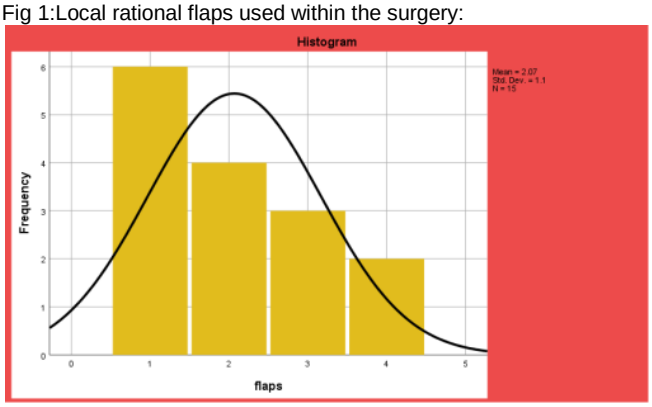
Table 2: Regions

Regions	n	%age
Lumbar	9	60
Lumbosacral	6	40
Total	15	100

Table 3: Complications

Complications	n	%age
Wound dehiscence	2	13.3
flap necrosis marginal	1	6.7
donor site partial graft loss	2	13.3
CSF leak	1	6.7
Hydrocephalus	2	13.3

Fig 1:Local rational flaps used within the surgery:



DISCUSSION

In this study, local flaps are used to operate on 15 patients with meningomyelocele. In two patients (13.3%) with meningomyelocele in the sacral area, z plasty was employed. To provide adequate blood circulation, fascia over the gluteus maximus was added. The findings were consistent with other research case series[4]. This technique was modified by sparing the muscle and raising fasciocutaneous flaps using perforators in the gluteal area. In 4(20%) cases, we employed superior gluteal artery perforator flaps. These flaps deployed in a similar vast series with no notable difficulties. In 5 (26.6%) patients, double rotation flaps (yin yang) were used. The smallest defect corrected by yin yang flap in our patients was 3x2 cm^2. Respectively rotational flaps are enclosed without pressure and wipe out the requirement for a stitch line over the dural fix. The more limited time of careful mediation in raising the neighborhood flap, additionally diminishes severity. Yin yang flaps are quicker, simpler to work, and take out the requirement for a stitch line over the dural fix. The useful result of long flank folds exhibits their significance, especially when enormous perforators on one side are accessible in acceptable condition[4].

Although primary closure of small meningomyeloceles is possible with extensive undermining, attempts to close big meningomyeloceles result in wound dehiscence. In big meningomyeloceles, the problem is to provide appropriate soft tissue cover over the neural repair. Another research first discovered that only 25% of patients with meningomyelocele required more sophisticated closure techniques than primary closure in a group of 130 individuals[1].

Primary wound healing can be accomplished in tiny meningomyeloceles by undermining the wound borders widely. With increased understanding of the cutaneous vasculature, perforator flaps are being employed more frequently in clinical practice to decrease donor site morbidity. Additionally, they provide significant design freedom, enabled by the use of a handheld Doppler ultrasound to locate specific cutaneous perforators, and can be customized to the proportions required at the intended recipient location. These characteristics make perforator flaps an ideal reconstructive tool that is why they are now frequently employed to treat and cover a variety of cutaneous abnormalities[5].

With the advent of the perforator concept in flap surgery, it became possible to harvest many of the previously reported musculocutaneous flaps as perforator flaps while preserving the underlying muscle. The intercostal vessels create an arcade, which is perforated multiple times. Each perforator can serve as a blood supply for a skin flap. These flaps, which are based on the free style flap concept, can be harvested to cover deformities extending from the lower neck to the lower belly and lumbosacral area on the trunk.[6]

CONCLUSION

Local transposition or rotation of fasciocutaneous flaps is a very effective and reliable technique for reconstructing major meningomyelocele lesions in the lumbar and lumbosacral spine.

Conflict of interest: Nil

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