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Clinical outcome of V-Y Flap with latissimus dorsi and gluteal advancement for treatment of large thoracolumbar myelomeningocele defects: A Comparative Study

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Objective: Surgical repair and closing the myelomeningocele (MMC) defects is important and vital as the mortality rate is as high as 65%-70% in untreated patients. Closing the large MMC defects has been a dilemma to pediatric neurosurgeons and plastic surgeons. The aim of the current study is to report the operative characteristics and outcome of a series of Iranian patients with large myelomeningocele defects utilizing V-Y flap and with latissimus dorsi and gluteal muscles advancement.

Methods: This prospective case-controlled study was conducted during a 4-year period from September 2013 to October 2017 in pediatric neurosurgery department of Shiraz Namazi hospital, Southern Iran. We included a total number of 24 patients with large MMC defects who were operated utilizing the bilateral V-Y flap and latissimus dorsi and gluteal advancement. We also retrospectively recruited 19 patients with age, gender and defect size matched controls who were operated using the primary or delayed closure techniques in our center. At least 2 year of follow-up was conducted. The frequency of leakage, necrosis, dehiscence, systemic infection (sepsis, pneumonia), need for ventriculoperitoneal (VP) shunt insertion and mortality was compared between the two study groups.

Results: The bilateral V-Y flap with muscle advancement was associated with significantly longer operation duration ($p < 0.001$)

and larger amounts of intraoperative bleeding ($p = 0.007$) when compared to the primary closure group. Those undergoing bilateral V-Y flap with muscle advancement had significantly lower rates of surgical site infection ($p = 0.038$), wound dehiscence ($p = 0.013$) and postoperative CSF leakage ($p = 0.030$) when compared to those undergoing primary repair. Bilateral V-Y flap with muscle advancement was also associated with lower mortality rate [$p = 0.038$; OR (95% CI): 5.09 (1.12-23.1)] compared to the primary closure. In those undergoing bilateral V-Y flap and muscle advancement, longer operation duration was significantly associated with mortality ($p = 0.008$), In the same way, surgical site infection ($p = 0.032$), wound dehiscence ($p = 0.011$) and postoperative leakage ($p = 0.011$) were predictors of mortality. Neonatal sepsis ($p = 0.002$) and postoperative NEC ($p = 0.011$) were among other predictors of mortality in this group.

Conclusion: The bilateral V-Y flap with latissimus dorsi and gluteal advancement is a safe and effective surgical approach for covering the large MMC defects being associated with lower rates of surgical site infection, dehiscence, CSF leakage and mortality. Further studies are required to elucidate the long-term outcomes.

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