

Reconstruction of a Soft Tissue Defect of the Back after Myelomeningocele Closure with Modified V-Y Plasty

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ABSTRACT

Myelomeningocele is a congenital defect in vertebral arches with cystic dilatation of meninges and structural or functional abnormality of spinal cord or cauda equina. It is a form of spinal dysraphism with overlying skin defect (spina bifida aperta). That condition is related to other clinical complications such as infection that can produce furthermore complications. To prevent rate of complications surgical treatment in first 24 h is strongly suggested. In this case report we describe a patient (infant) with congenital myelomeningocele who's defect was treated surgically by the neurosurgeon. In operative procedure plastic surgeon was involved to cover the skin defect remaining after neurosurgical closure of spinal canal. Bilateral advancement local skin flaps were used in soft tissue defect closure. Review of the literature that refers to advancement local skin flaps was carried out.

Key words: congenital myelomeningocele, plastic surgery

Introduction

Myelomeningocele is a congenital defect in vertebral arches with cystic dilatation of meninges and structural or functional abnormality of spinal cord or cauda equina. It is a form of spinal dysraphism with overlying skin defect (spina bifida aperta). That makes spinal cord and meninges (the tissues covering the spinal cord) to stick out of the child's back. That condition is related to other clinical complications such as infection that can produce furthermore complications. To prevent rate of complications surgical treatment in first 24 h is strongly suggested. Although surgical treatment is not associated with improvement of neurologic function but evidence medicine support that lower infection rate after surgical closure of myelomeningocele reduces the rate of furthermore complications. Myelomeningocele may affect as many as 1 out of every 800 infants. The cause of myelomeningocele is unknown but low levels of folic acid in a woman's body before and during early pregnancy is thought to play a part in this type of birth defect.

Latissimus dorsi muscle flap covered with split thickness skin graft is the most usual procedure performed by plastic surgeons in closing of such defects after neurosurgical closure of spinal canal. Mentioned type of reconstruction is considered safe and reliable but latissimus dorsi vascularisation and duration of operative procedure remains as problems.

In this case report we describe another method of skin and soft tissue defect reconstruction where remaining defect after myelomeningocele closure is covered with bilateral advancement local skin flaps. Operative procedure is more simple and operative time much shorter in comparison with oftenly used transposition of latissimus dorsi muscle.

Case Report

A two days old male child was presented with birth defect of myelomeningocele (Figure 1). Neurosurgical

closure was performed and plastic surgeons were invited to reconstruct the remaining skin and soft tissue defect (Figures 2 and 3).

As mentioned above, bilateral local skin flaps were used to reconstruct the remaining defect. V-Y plasties were performed bilaterally on the each side of the back to



Fig. 1.



Fig. 4.



Fig. 2.



Fig. 5.



Fig. 3.



Fig. 6.



Fig. 7.

release big fasciocutaneous flaps which were later undermined and slid to central area to close the defect (Figure 4). Described procedure was performed to secure better vascularization (like in bipediced flaps) due to size of defect needed to be covered. All wounds were closed primary by direct stitching and wound healing was properly. Stitches were removed after 14 days (Figures 5, 6 and 7). Operative time was less than one hour and postoperative result was satisfying in cosmetic and functional outcome.

Discussion

Local flaps are commonly used in reconstruction of facial defects by both otolaryngologists and plastic surgeons. How defect is treated is determined by a variety of factors including: the location and size of the defect, the projected functional morbidity, the underlying cause of the defect, the medical history of the patient, and the patient's wishes. Many defects are amenable to or are more properly treated by allowing secondary healing to occur, with primary closure, or with the use of skin grafts. When the decision has been made to proceed with a local

skin flap often excellent results can be obtained if the surgeon has planned appropriately.

There are three basic types of random soft-tissue flaps the advancement flap, the rotation flap, and the transposition flap. Each of these flaps can be modified in an unlimited number of ways. Each design modification changes the angle of rotation, the amount of tissue moved, the distribution of tension, and the orientation of the final scar. It is helpful to analyze the fundamental concepts behind the advancement flap which basics were used in defect closure of myelomeningocele above.

The term advancement flap is usually referring to a flap created by incisions, which allow for a »sliding« movement of incised tissue. The movement is in one direction, and the flap advances directly over the primary defect. The basic design of an advancement flap is to extend an incision along parallel sides of the defect and then directly advance the tissue over the defect. Complete undermining of the advancement flap as well as the skin and soft tissue around the flap pedicle is very important.

V-Y flap is a unique flap where a V shaped flap is moved into a defect with primary closure of the donor area leaving a final Y shaped suture line. It is pedicled from the underlying subcutaneous tissue rather than the surrounding skin.

Conclusion

A technique of defect closure used in this case report was modification of two various advancement skin flaps used together and bilaterally. Postoperative result was perfect in also cosmetic and functional way. Operating time was shortened due to more often used method where covering of described defect is performed with transposition of latissimus dorsi muscle flap and split thickness skin grafts. We are not saying that local skin flaps should be used instead in further cases but to be considered as a reliable and safe operative method.

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REKONSTRUKCIJA DEFEKTA KOŽE I MEKIH TKIVA ZAOSTALIH NAKON ZATVARANJA MENINGOMIJELOKELE MODIFICIRANIM V-Y PLASTIKAMA

S A Ž E T A K

Opisujemo pacijenta (dojenče) sa kongenitalnom meningomijelokelom gdje je spinalni kanal zatvoren neurokirurškom operacijom dok je za zatvaranje zaostalog defekta kože i mekih tkiva bila potrebno uključivanje plastične kirurgije. Spomenuti defekt kože i mekih tkiva u ovom slučaju rekonstruiran je bilateralnim loklanim kožnim kliznim režnjevima, odnosno modificiranim »V-Y« plastikama. U ovom članku opisuju se i značajke lokalnih kožnih kliznih režnjeva koje su izvedeni iz dosada objavljene stručne literature.