

Whether or Not A Shunt is Placed in the Brain (Pre/Post Repair) for Patients with a Lumbar Meningocele and Hydrocephalus Undergoing a Lumbar Meningocele Procedure

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Abstract

This study involves the important comparison in doing V-P shunt operation before surgical correction and repair to the neonates born with spinal dysraphism meningocele at the lumbar region versus doing V-P shunt after repair of neural tube defect meningocele to avoid post operative (correction of neural tube defect) leaking cerebrospinal fluid and surgical wound infection.

The study 50 newborn babies with hydrocephalus and spinal dysraphism meningocele

Keyword: CSF , computerized ctscan, hydrocephalus, spinal dysraphism, meningocele

Introduction

The spinal dysraphism meningocele is one of the spine congenital abnormalities that involve defect in the posterior neural arch and present as sac containing only cerebrospinal fluid and meninges and no any neural tissue and constitute less than 10% of all spinal dysraphism¹

The myelomeningocele is considered more severe than meningocele because in meningocele the cord remain with in the spinal canal and the spinal nerves not present in the overlying sac which contain just cerebrospinal fluid with no spinal cord nerves that are protected from the damage.

The sphincteric control and physical growth are more likely to maintained in meningocele.

Spinal dysraphism can be diagnosed during pregnancy by ultra sound examination during prenatal follow up as this type of spinal dysraphism may be associated with the Hydrocephalous.

This type of spinal dysraphism (meningocele) commonly located anatomically at the lumbosacral region and less at the cervicodorsal region.

Regarding this type of spinal dysraphism (meningocele) has a better outcome in lower limb movements development.

Regarding the causes of meningocele spinal dysraphism is environmental or multi factorial(folic acid deficiency)^{2,3}

This type of spinal dysraphism occurs during the first 28 days of pregnancy prior the women confirmation of pregnancy.

The neural tube defect meningocele developed early and because of this development make it difficult to diagnose and manage before ultrasonography test.

The ultrasonography firstly done at about 126 days and by this time physical harms are permanent if the baby has a major spinal dysraphism .

Even if the ultrasonography can discover the spinal dysraphism the level of the harm and damage can not be assess till the neonate is born .

The spinal dysraphism by its effect can range from miner bladder problems to more growth and general physical damage.

Among the most important problems from this type of spinal dysraphism are lower extremities problems, sphincteric problems and average brain growth subnormality.^[4,5]

Meningocele presented clinically as lower back swelling soft inconsistency covered by skin or membrane and has positive translumination test.

The most important investigations used in the diagnosis of meningocele are:

1. Lumbosacral spine X-ray which reveal posterior neural arch defects in the involved spine
2. MRI to rule out other intraspinal anomalies like lipoma and tethered cord
3. Ultrasonography or computed CTscan if no MRI.

Neurological examination done for meningocele: site, size and cyst consistency with measurements of OFC, spine palpation and search about other skin manifestation of dysraphism^[6] sensory and motor examination including dermatomal^[7,8] and anal reflex examination also important if it's absent^[9-11].

The following are important factors in the causes of hydrocephalus with spinal dysraphism^[12-13]

Arnold-chiari malformation

Aqueductal stenosis

Sigmoid sinus compression

Other CNS congenital abnormalities^[16]

The aim of the study to see and compare between two groups of neonates having spinal dysraphism and hydrocephalus, first group include neonates with pre operative repair of meningocele VP shunt and the second group include those with postoperative repair VP shunt and to find the appropriate time for hydrocephalus treatment by shunt operation before or after dysraphism repair

Materials and Methods

A study of 50 neonates with lower back spinal dysraphism and hydrocephalus with age less than 30

days in al hilla general teaching hospital neurosurgical department (first December 2014– first December 2015)

All patients has swelling at lumbosacral region meningocele with coverage skin was intact and have mild-moderate hydrocephalus diagnosed by ctscan of the brain and cerebrospinal fluid analysis done to exclude infection. Myelomeningocele neonates have excluded by ultrasonography and MRI.

The neonates were divided in to two groups, fifty two patients VP shunt done before meningocele repair and the other fifty two neonates underwent direct repair.

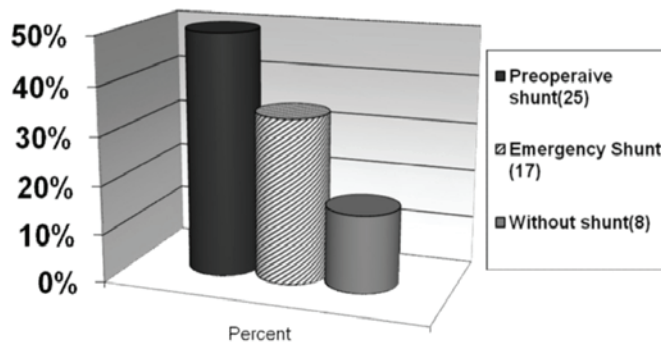
Of those with pre operative VP shunt done fist, repair of the defect done two-three weeks after Vp shunt.

Those neonates with direct surgical repair develop hydrocephalus and VP shunt done seven-ten days after repair. And when we remove the stitches after 10 days some patients develop cerebrospinal fluid leak from wound site for which VP shunt done with wound management by antibiotics, and frequent daily cleaning with antiseptic, other neonates develop cerebrospinal fluid collection under the skin which mandate daily aspiration, dressing the wound tightly and antibiotic treatment. some neonates develop wound dehiscence and infection before ten days treated by shunt and local wound treatment with daily dressing and antibiotics

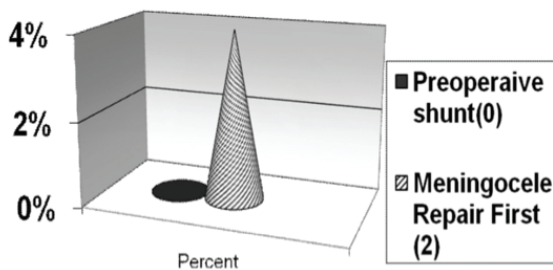
Results

We classify the patients in the two groups: first group 25 neonates 50% has VP shunt before repair, in this group repair of the meningocele done two to three weeks after shunt and the patients medical condition is well and the site of repair was clean and there is no cerebrospinal fluid leak and no wound infection and the OFC became normal. Second group 25 neonates with the repair fist: fist seventeen neonates (34%) develop hydrocephalus and shunt done seven to ten days after repair and post operatively the neonates were in good medical health with head circumference return to normal. Second two neonates (4%) Have cerebrospinal fluid leak from the repair site after removal of stitches, shunt was done and local treatment of wound with antibiotics

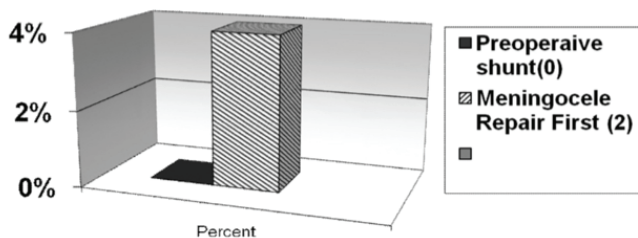
Shunt



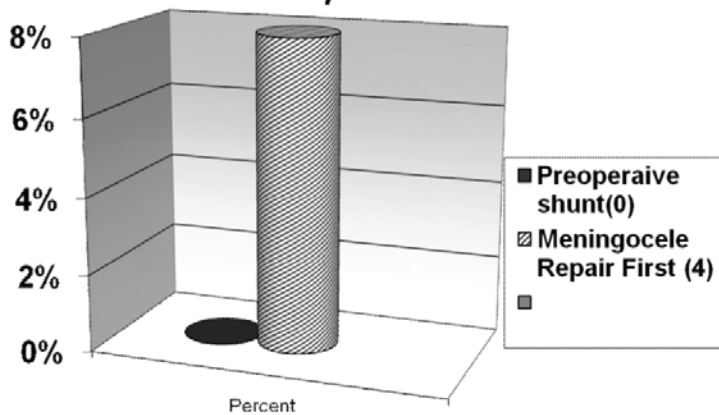
CSF Leak after operation



CSF Subcutaneous collection after operation



Wound infection and dehiscence after operation



Discussion and Conclusions

The most important thing in this study is the cerebrospinal fluid leak from the site of the meningocele repair in patients with meningocele and hydrocephalus and managed only by repair only, because after removal of stitches by 10 days we found either CSF leak from the wound which necessitate shunt procedure immediately to decrease and decompress the sac and to prevent further wound dehiscence and infection, some times we found CSF collection under the skin which also need daily aspiration and shunt procedures while those neonates with meningocele and dilated ventricles and treated by firstly shunt then repair of meningocele has better outcome regarding no CSF leak and no wound infection at the repair defect site

And this study was very useful and important in our country in management of neonates patients with meningocele and hydrocephalus and considered an applied study that serves the community by avoiding the surgical wound infection and to prevent CSF leak and wound dehiscence by explaining these problems to the families of such patients and inform them about the important of VP shunt prior to the repair of meningocele if it's associated with hydrocephalus

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