

Article

# Post V-P shunt surgical site EDH an uncommon complication: case report

Manish Garg, Deepashu Sachdeva, Ketan Patel, Anita Jagetia, A.K. Srivastava  
INDIA



DE GRUYTER  
OPEN

DOI: 10.1515/romneu-2017-0043

## Post V-P shunt surgical site EDH an uncommon complication: case report

**Manish Garg, Deepashu Sachdeva, Ketan Patel, Anita Jagetia, A.K. Srivastava**

Department of Neurosurgery, GB Pant Institute of Postgraduate Medical Education and Research and Maulana Azad Medical College, New Delhi, INDIA

**Abstract:** ventriculoparietal shunt is well established modality of treatment for hydrocephalus. Complication of v-p shunt are also mentioned in literature like shunt infection shunt migration etc [8]. Here we are describing a rare complication of vp shunt which barely mentioned in literature. A 22 yr male admitted with complain of headache & vomiting patient was diagnosed to have tubercular meningitis with hydrocephalus. Patient planned for ventriculoparietal shunt surgery and vp shunt was done. On 3rd post-surgery day patient develop weakness in Left side of body. Urgent ncct head done which showed EDH at surgical site. Immediate craniotomy and evacuation of hematoma was done patient improved and discharged. Thus we are discussing the importance of meticulous surgery for v-p shunt, post op ct scan and treatment.

**Key word:** v-p shunt, v-p shunt complication, extradural hematoma

### Introduction

Ventriculoperitoneal (VP) shunting is a very common procedure done for the treatment of hydrocephalus, and is associated with fewer complications as compared to other methods of ventricular decompression and include shunt obstruction, infection, development of craniostoma, microcephaly, and excessive drainage of cerebrospinal fluid (CSF) leading to intracranial hematomas (subdural, epidural, and intraventricular) [8, 4]. Among the intracranial hematomas, subdural hematomas

(SDHs) are more common than extradural hematomas (EDHs) [7]. We are reporting a case of postoperative EDH following VP shunt placement in an adult patient with a tubercular meningitis and hydrocephalus.

### Case Report

22 year male admitted with c/o headache and vomiting for 6 month patient was investigated and ct head showed gross dilatation of all ventricles with change of tubercular meningitis. Other supporting investigation to confirm the tuberculosis like

ESR, mauntaoux test, PCR which confirmed the diagnosis of TBM. Patient planned for right v-p shunt (chabra medium pressure slit and spring shunt). Under general anesthesia patient was positioned in supine head was tilted left side after painting and draping U shaped incision given at frazier's point (6 cm above and 4 cm lateral toinion). Burr hole made dura coagulated cruciate incision given and shunt ventricular end inserted in first attempt. CSF pressure was highly raised and CSF was grossly cleared CSF sent for culture sensitivity cytology, biochemical study. Post operatively patient symptoms got relieved. On 3 rd post-operative day patient became disoriented and developed weakness left side of body. Urgent Ncct head done which showed right parieto-occipital EDH with mass effect and midline shift. Immediately patient underwent right parieto-occipital craniotomy and evacuation of extradural hematoma. Post operatively patient improved neurologically and discharged with no neurological deficit. He has been under regular follow up and has no neurological deficit.



Figure 1 - preoperative image showing hydrocephalus



Figure 2 - right parieto-occipital edh with mass effect {coronal cut}



Figure 3 - right parieto-occipital edh with mass effect {axial cut}



Figure 4 - extra dural hematoma at vp shunt site {intraoperative image}



Figure 5 - post edh evacuation {axial cut}

## Discussion

Extra dural hematoma, as a complication of ventriculoperitoneal shunt surgery for the management of hydrocephalus, is a rare condition. It often occurs in young patients, and there are some anatomical regions (parietal and frontal) where the pathology is more frequently found. The theory behind the occurrence of this not clear and many hypothesis given to justify the occurrence of EDH post v-p shunt. Many author thought that pressure exerted on dura while inserting the ventricular end lead to the separation of dura from inner surface of skull lead to damage of in between vessel which lead to the EDH formation. Sudden decrease in intracranial pressure post shunt can lead to expansion of EDH [7]. Multiple attempt for insertion of ventricular end can lead to parenchymal injury which also lead to EDH formation.

Extradural hematoma always develops in a matter of days, weeks or months after surgical

procedure [1, 6]. Contrary in our case patient presented acutely. Patients with very high intracranial pressure or with intensive cortical atrophy, in long standing hydrocephalus, are most at risk. Perhaps the skull-to-duramater adhesion become altered. The mortality of patients with EDH is higher than for those with subdural bleeding. [2]

Coagulation profile disarrangement also an important factor for EDH at operative site [3]. Post-operative trauma also a responsible factor. In our case report since patients coagulation profile was normal and there is no history of any trauma in postoperative phase. Since we prefer to give small cruciate incision over dura before insertion of ventricular end chance of overstretching of dura ruled out. Ventricular end was inserted in first attempt so trauma to parenchyma which lead to EDH has also ruled out so in our case sudden decompression of the ventricles and lowering of ICT seem to be the cause of EDH formation at the operative site.

## Conclusion

Extradural hematoma though is very rare after shunt surgery but it must be consider as the differential diagnosis of post v-p shunt deterioration of patient. Since it can be easily diagnosed and treated NCCT should be done to rule it out. We also conclude that meticulous surgery for v-p shunt and routine use of the high pressure systems (90 mm to 120 mm water) to minimize sudden changes[5] and using newer ways to slower the decompression like anti-gravity can prevent such a deadly complication.

### **Correspondence**

*Dr. Manish Gaeg*

*Department of Neurosurgery*

*GB Pant Institute of Postgraduate Medical*

*Education and Research and Maulana*

*Azad Medical College.*

*Full Postal Address: Department of Neurosurgery,*

*GB Pant Institute of Postgraduate Medical*

*Education and Research and Maulana*

*Azad Medical College, JLN marg I, New Delhi,*

*India. Pin Code: 110002*

*Email: manishgarg11@gmail.com*

### **References**

1. Alappat JP, Baiju, Praveen, Jayakumar K, Sanalkumar P. Delayed extradural hematoma: A case report.
2. arq neuropsiquiatr epidural hematoma after ventriculoperitoneal shunt surgery 1998;56(3-b):629-632.
3. Fujimoto Y, Aguiar PH, Carneiro JD, Martins RS, Ciquini O, Jr, de Andrade AF, et al. Spontaneous epidural hematoma following a shunt in an infant with congenital

factor X deficiency. Case report and literature review. *Neurosurg Rev.* 1999;22:226-9. [PubMed: 10682933].

4. Kalia KK, Swift DM, Pang D. Multiple epidural hematomas following ventriculoperitoneal shunt. *Pediatr Neurosurg.* 1993;19:78-80. [PubMed: 8443100].

5 'O'Brien MS. Hydrocephalus in Children. In: Youman JR, ed. *Neurological Surgery*, 2nd ed. Philadelphia: WB Saunders, 1982; Vol.3,1409-16.

6. Vinay Byrappa, Shruti Redhu, and Bhadrinarayan Varadarajan J *Neurosci Rural Pract.* Delayed incidental diagnosis of postoperative extradural hematoma following ventriculoperitoneal shunt 2015 JanMar; 6(1): 94-96. doi: 10.4103/09763147.143211 PMID: PMC4244800.

7. Wolfsberger S, Gruber A, Czech T. Multiple supratentorial epidural haematomas after posterior fossa surgery. *Neurosurg Rev.* 2004;27:128-32. [PubMed: 14652780].

8. Wu Y, Green NL, Wrench MR, Zhao S, Gupta N. Ventriculoperitoneal shunt complications in California: 1990 to 2000. *Neurosurgery.* 2007;61:557-63. [PubMed: 17881969]