



CHRONIC SUBDURAL HAEMORRHAGE BURR HOLE EVACUATION-A COMPARATIVE STUDY OF AWAKE CRANIOSTOMY VERSUS GENERAL ANAESTHESIA CRANIOSTOMY

S. Rajkumar

M.Ch., ASSISTANT PROFESSOR, Department of Neurosurgery, Government Stanley Medical College, Chennai, Tamil Nadu, India.

A. R. Baskar.*

D.ORTHO., M.S.,M.Ch., ASSISTANT PROFESSOR, Department of Neurosurgery, Government Stanley Medical College, Chennai, Tamil Nadu, India.*Corresponding Author

P. Pallavan.

(M.Ch), Neuro, Surgery Post Graduate, Department Of Neurosurgery, Government Stanley Medical College, Chennai, Tamil Nadu, India.

ABSTRACT

BACKGROUND: Chronic subdural hematoma (CSDH) is one of the most common neurosurgical conditions. There is lack of uniformity in the treatment of CSDH amongst surgeons in terms of various treatment strategies. Most of the recent trials favor the use of drain to reduce recurrence rate. Craniotomy and twist drill craniostomy, Burr hole craniostomy also play a role in the management.

AIM; Present study compares the advantage and disadvantages of burr hole craniostomies under local anaesthesia with awake patients and under general anaesthesia.

MATERIALS AND METHODS: This study conducted in our neurosurgery department during the period of 2013-2018 in Stanley Medical College Chennai. Total cases are 156. 86 cases of Burr hole craniostomies done in scalp block anaesthesia with awake patients categorised in to Group-A and 70 cases of chronic SDH evacuated under General anaesthesia are compared as Group-B.

RESULTS: Favourable results for Group-A cases related to anaesthesia complications and post operative pain relief and zero percent recurrence rate in both the groups.

KEYWORDS : Chronic sub dural haemorrhage, burr hole evacuation. Scalp block anaesthesia

INTRODUCTION

Chronic subdural haemorrhage (CSDH) is one of the most common neurosurgical emergencies. The recommended surgical procedures for CSDH continues to attract debate. Various surgical procedures are burr hole, twist drill, craniotomy. There is also debate about the use of drain, irrigation, and steroid.[1,2]

The incidence of CSDH is about 1-5.3 cases per 100,000 population per annum. The incidence is increasing due to increase in aging population, hemodialysis, anticoagulant, and/or antiplatelet therapy patients.[3,4] Although the surgical techniques are simple, recurrences remain one of the challenges in the treatment. This study compares the effectiveness of awake versus anaesthetized patients operated for CSDH with burr hole craniostomy with closed underwater seal drainage system in our institute.

MATERIALS AND METHODS

With informed consent uncooperative patients are categorised in to Group-B and operated under Endotracheal tube General Anaesthesia. Well cooperative patients and patients with other comorbid conditions and not suitable for general anaesthesia cases are operated under scalp block and categorised as Group-A. Burr hole incisions are marked at frontal and parietal region at maximum pocket areas preferably over the midpupillary line or along the imaginary FTP reverse question mark line after scalp block or ETGA. The incision line infiltrated with adrenaline saline regardless of anaesthesia to minimise scalp bleeding intra operatively. After reaching the skull bone by stripping the periosteum and burr holes made, dura cauterised and opened in cruciate fashion, the dural leaflets shrunken by cauterising them. After evacuation of CSDH the cranial cavity thoroughly washed with normal saline wound closed in layers with subgaleal drain in the fashion of only tip of the drains inside the subdural cavity the other ends put it in to the closed under water seal drainage system. The drains are kept for three days with head in flat position. Suture removal done on 7th post operative day.

RESULTS

Totally 156 cases were operated in both groups. In group-A (Male cases-60, Female cases 26). In Group-B (Male cases-41, Female cases-29). Post operative wound infection cases-zero. Post operative CSF leak cases-zero. CSDH Recurrence cases-zero. Anaesthesia related complications are not associated with Group-A. Additional need of ventilators, Pneumonia, Deep vein thrombosis are more with Group-B.

Table.1 Shows comparative study

S.No	Parameters	Group-A Scalp block Awake burr hole craniostomy	Group-B General Anaesthesia burr hole craniostomy
1	Anaesthesia complications	Negligible	More
2	Patient cooperation	Must	Not needed
3	Procedure time	Less	More
4	Cost	Less	More
5	Inpatient stayal	Less	More
6	intra operative vitals	stable	Variable, narcotics needed
7	Postoperative pain relief	good	Additional drugs needed

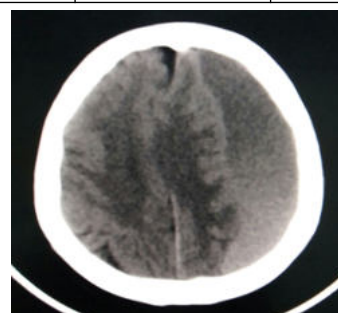


Figure 1 CHRONIC SDH CT SCAN IMAGE



Figure 2 CSDH BURR HOLE EVACUATION



Figure POST OP PATIENT WITH UNDER WATER SEAL CLOSED

DISCUSSION

Surgery is the best option in moderate to large hematoma with neuro deficit. One surgical technique may not be appropriate for all CSDHs. The selection of an ideal treatment strategy for an individual patient should be the target.[5] Removal of CSDH is enough in most of the patients with associated arachnoid cysts.[6] Burr-hole surgery can be done under local anesthesia in most of the patients. The surgery for CSDH under monitored anesthesia using conscious sedation has been found to be safe and effective in some cases. Conscious sedation using monitored anesthesia care may facilitate patient comfort and surgical competence in CSDH.[7]

The incidence of the atelectasis, pneumonia, decubitus ulcer, and deep vein thrombosis could be more if patients are kept in supine position postoperatively, especially in elderly. A 30° head-up position soon after operation in CSDH does not significantly affect the outcome and recurrence.[8] Early mobilizing after surgery could prevent postoperative pneumonia and urinary tract infection without increasing the risk of recurrence in elderly patients of 65 years or more.[9] Some authors, on the other hand, do not recommend upright position soon after surgery because the incidence of postoperative atelectasis, pneumonia, decubitus ulcer, and deep vein thrombosis is the same in 30°-40° sitting position and supine position, but the recurrence rates are significantly more in upright position.[10] Various types of the drainage, such as the subdural, the subperiosteal, and the subgaleal drainage, are being used for continuous drainage after surgery. Both the subdural and subperiosteal methods are found to be highly effective, but the mortality and serious complications are less in subperiosteal drainage.[12] The subperiosteal closed drainage system is a technically easy, safe, and cost-efficient treatment strategy for CSDH. The absence of a drain in direct contact with the hematoma capsule may reduce the risk of postoperative seizure and limit the secondary spread of infection to intracranial compartments.[13] Although the mortality and the complications of the subperiosteal drain were lower than the subdural drain, the recurrence rate was more in subperiosteal drain as compared to subdural drain in some reports.[14] Subgaleal suction drain is also an effective, simple, and safe method. It significantly reduces the incidence of recurrence.[11] Burr-hole craniostomy is the most efficient choice for surgical drainage of uncomplicated CSDH. Burr-hole craniostomy is associated with a low recurrence rate and lesser complications.[15] Treatment of CSDH through a burr-hole irrigation and closed-system drainage under local anesthesia is simple, safe, and effective. Surgeons differ in their choice regarding usage of one or two burr holes. The one burr hole craniostomy with closed drainage could be sufficient to evacuate CSDH with lower or similar recurrence rate, as compared to two burr hole group. On the other hand, treatment of CSDH with one burr hole has been found to be associated with a significantly higher postoperative recurrence rate, longer hospitalization length, and higher wound infection rate, as compared to treatment with two burr hole.

CONCLUSION

The results are favourable for awake craniostomy in fully conscious, cooperative and high risk patients. Semi conscious, disoriented and medically fit patients needed general anaesthesia. Awake burr hole craniostomy is a patient friendly procedure. Recurrence rate is zero percent in both the groups may be due to closed underwater seal drainage system we used in all cases. GA craniostomy is a surgeons friendly procedure. However large multicentre study needed to standardise the indications and to study the recurrence rate.

REFERENCES

1. Santarius T, Lawton R, Kirkpatrick PJ, Hutchinson PJ. The management of primary chronic subdural haematoma: A questionnaire survey of practice in the United Kingdom and the Republic of Ireland. *Br J Neurosurg*. 2008;22:529-34.
2. Cenic A, Bhandari M, Reddy K. Management of chronic subdural hematoma: A national survey and literature review. *Can J Neurol Sci*. 2005;32:501-6.
3. Karibe H, Kameyama M, Kawase M, Hirano T, Kawaguchi T, Tominaga T. Epidemiology of chronic subdural hematoma. *No Shinkei Geka*. 2011;39:1149-53.
4. Krupa M. Chronic subdural hematoma: A review of the literature. Part 1. *Ann Acad Med Stetin*. 2009;55:47-52.
5. Santarius T, Kirkpatrick PJ, Kolia AG, Hutchinson PJ. Working toward rational and evidence-based treatment of chronic subdural hematoma. *Clin Neurosurg*. 2010;57:112-22.
6. Domenicucci M, Russo N, Giugni E, Pierallini A. Relationship between supratentorial arachnoid cyst and chronic subdural hematoma: Neuroradiological evidence and surgical treatment. *J Neurosurg*. 2009;110:1250-5.
7. Guzel A, Kaya S, Ozkan U, Ufuk Aluclu M, Ceviz A, Belen D. Surgical treatment of chronic subdural haematoma under monitored anaesthesia care. *Swiss Med Wkly*. 2008;138:398-403.
8. Ishfaq A, Ahmed I, Bhatti SH. Effect of head positioning on outcome after burr hole craniostomy for chronic subdural haematoma. *J Coll Physicians Surg Pak*. 2009;19:492-5.
9. Kurabe S, Ozawa T, Watanabe T, Aiba T. Efficacy and safety of postoperative early mobilization for chronic subdural hematoma in elderly patients. *Acta Neurochir (Wien)* 2010;152:1171-4.
10. Abouzari M, Rashidi A, Rezaii J, Esfandiari K, Asadollahi M, Aleali H, et al. The role of postoperative patient posture in the recurrence of traumatic chronic subdural hematoma after burr-hole surgery. *Neurosurgery*. 2007;61:794-7.
11. Gazzeri R, Galarza M, Neroni M, Canova A, Refice GM, Esposito S. Continuous subgaleal suction drainage for the treatment of chronic subdural haematoma. *Acta Neurochir (Wien)* 2007;149:487-93.
12. Bellut D, Woernle CM, Burkhardt JK, Kockro RA, Bertalanffy H, Krayenbühl N. Subdural drain age versus subperiosteal drainage in burr-hole trepanation for symptomatic chronic subdural hematomas. *World Neurosurg*. 2012;77:111-8.
13. Zumofen D, Regli L, Levivier M, Krayenbühl N. Chronic subdural hematomas treated by burr hole trepanation and a subperiosteal drainage system. *Neurosurgery*. 2009;64:1116-21.
14. Sindou M, Ibrahim I, Maarrawi J. Chronic sub-dural hematomas: Twist drill craniostomy with a closed system of drainage, for 48 hours only, is a valuable surgical treatment. *Acta Neurochir (Wien)* 2010;152:545-6.
15. Ibrahim I, Maarrawi J, Jouanneau E, Guenot M, Mertens P, Sindou M. Evacuation of chronic subdural hematomas with the Twist-Drill technique: Results of a randomized prospective study comparing 48-h and 96-h drainage duration. *Neurochirurgie*. 2010;56:23-7.