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A Modified Technique for Treatment of Chronic Subdural Hematoma with Intermittent Irrigation and Unilateral Drainage System

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Chronic Subdural Hematoma (CSDH) is the problem of infancy and elderly. There are many technique for operation of CSDH, but recurrent bleeding, pneumocephalous and cerebral swelling are the main complication of these techniques. A simple and easy technique is used with intermittent irrigation and unilateral drainage system, which can prevent the two main problems of CSDH operation, cerebral swelling and pneumocephalous. We have operated 17 patients with CSDH between 21 March 2003 till 20 March 2004 with our technique. 76.5% of the patients were male and 23.5% patients were female. The range of the age was between 2 year till 90 year. The main reasons for admission were Hemiplegia (35.2%), Dementia (35.2%), Headache (47%) and symptoms mimicking CVA (20.4%). After operation there was not pneumocephalous or a very small bleb of air at post operation CT-scan. We did not have any complication except two recurrent CSDH, in one of them at the contra lateral side and in one case at the same side who still had continued the consumption of Aspirin after operation. These two cases have been also operated successfully with the same technique.

Key words: Chronic subdural hematoma, complications, intermittent, intermittent irrigation, unilateral, unilateral drainage system

INTRODUCTION

Chronic Subdural Hematoma (CSDH) is a common problem during infancy and after 5th and 6th decades of life^[1,2]. CSDH usually occur as the consequence of trauma, alcoholism, anticoagulation therapy and shunting^[3,4]. Although different surgical approaches exist for treatment of CSDH^[5,6], non-of these approaches are superior to others^[2,5]. Twist drilling, burr hole and craniotomy with and without irrigation and with or without drainage have been used^[7,8]. The main potential problems for all of these techniques are; recurrent CSDH, pneumocephalus, acute decompression and infection^[9-11]. Pneumocephalus can increase the chance of recurrent CSDH and acute decompression of CSDH can induce severe brain swelling or intracerebral hematoma^[9,10]. In our department we have used a new, simple and easy technique for CSDH operation. In this technique Irrigation with One-way Valve Drainage System (IOVDS), it's possible to prevent acute decompression and pneumocephalus.

MATERIALS AND METHODS

In this study we have operated 17 patients between 21 March 2003 till 20 March 2004 with our technique. Five patients have been admitted from emergency unit, 7 patients from private clinic of our university and 5 patients after consultation from department of neurology. All of the patients have been admitted to operating room and after the operation and placement of the system they were transferred to the department of neurosurgery. The intermittent irrigation was continued for 24 h and then the catheter was removed. Between 5-7 days after control CT Scan was performed. The patients were discharged from hospital between 3-10 days operation.

The patients were visited between 14-60 days after operation in private clinic of our university. In one case consultation was not possible because he didn't returned for follow-up. The operation with this technique was performed with local or general anesthesia according to the condition of the patients. During operation the patients were located in lateral position with affected side up. After small skin incision a burr hole was placed over the cranium. Before opening the dura the irrigating drainage system was prepared as follow:

Two, 3-way stopcock (3-WS) were connected to each other in series. At the end of the first 3WS a nelaton catheter which later will be passed toward subdural space is attached (for adult we use nelaton no-8 and for children no-10). At the other side of the second 3-SC a 5cc syringe is attached.

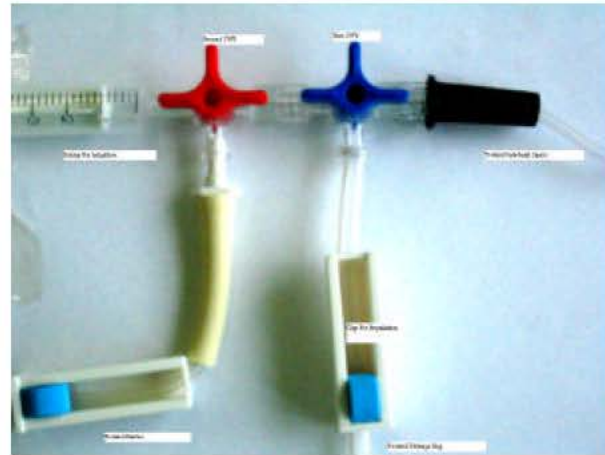


Fig. 1: The 3-WS and their connection to each other and to drainage bag and Baxter for irrigation

At the other side of the first 3-WS a unilateral drainage bag is connected and for the other side of the second 3-WS a Baxter of normal saline for irrigation is connected. The irrigation-drainage system is ready (Fig. 1).

Now, a small incision is made over the dura without perforating the membrane of subdural hematoma. The tip of nelaton passed gently toward the subdural space.

Now, the valve of the first 3-WS is so located that lead the subdural content flow toward the unilateral drainage bag. After 1 to 2 min the valve of the second 3-WS is placed in position that we can aspirate 5cc of normal saline for irrigation from the Baxter. Then the valve of the first 3-WS is located in position that is in series with the second 3-WS, as shown in the Fig. 1. Five to ten milliliters of normal saline for irrigation is injected toward subdural space. Then the valve of the first 3-WS is placed at its former position and again the content of subdural flow toward the unilateral drainage bag. This circle repeats again and again until the fluid is completely clean and clear.

RESULTS

From 21 March 2003 till 20 March 2004 we have operated 17 CSDH with our new technique. Thirteen patients were male and 4 patients were female. The range of the age was between 2-90 years. The main reasons for admission were Hemiplegia (6/17), Dementia (6/17), Headache (8/17) symptoms mimicking CVA (3/17).

A history of head trauma have been occurred in 9/17 of patients. In one case (♀/2y) she was highly suspected of child abuse. Papilledema was detected in 8/17 of our patients.

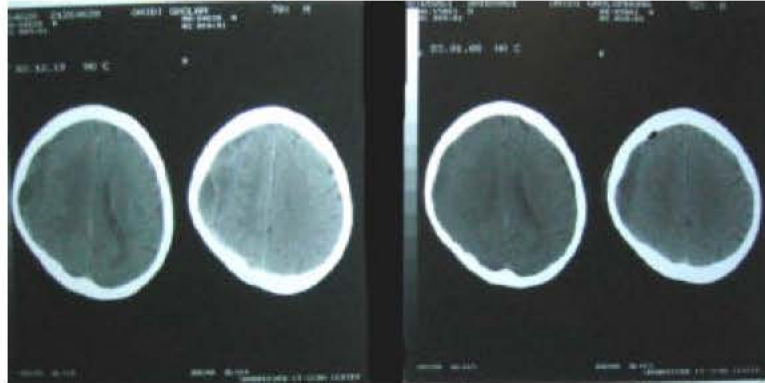


Fig. 2: CSDH at right side before operation (left) and immediately after operation (right)

CT-Scan was performed in all of the patients and because the CSDH was not diagnosed or missed in primary CT-Scan MRI was performed in 2 patients. One of patient (σ -65y) had recurrent CSDH ipsilaterally after 18 days who was operated again with the same technique. Another patient was operated again because of contra lateral CSDH after 3 week. In one of the patient CSDH was bilateral. All of the patients were discharged from hospital after 3 days (10/17), 3-7 days (5/17) and after the first week(2/17).

Two patients were admitted for reoperation of ipsilateral and contra lateral after 18 and 21 days, respectively. Control CT Scan was performed in 24 h after the operation in all of the patients which shown resolution of CSDH and partially expansion of cerebrum. In CT Scan there was not puenocephalous or only very small bulb of air in the entire patients (Fig. 2).

One patient (σ /65y) was operated again with the same technique with complete resolution of CSDH after 14 days of the first operation.

DISCUSSION

CSDH is mainly the disease of infancy and elderly, especially among male. A history of head trauma has been reported in 30-70% of patients^[1,5]. The clinical presentation of our patients is not so different from other services^[3,4]. The main two problems during and after different techniques for CSDH operation are puenocephalous and acute decompression^[1,2,10]. These two problems can be avoided with this technique. During operation, by our technique air cannot enter the subdural space because at the distal part of drainage bag there is a unilateral valve that lead the subdral content pass but prevent the passage of air toward subdral space. At the other hand this is a closed system, there Hematoma has

been completely evacuated and there is only a bleb of air at the right side. for during aspiration and injection of saline, air have not any way for entering to subdural space and also the chance of infection is really very low. At the other hand puenocephalous by itself can not only prevent re-expansion of the brain but also increase the risk of recollection of CSDH^[11]. Because in our technique we can adjust the flow of fluid from subdural space by clip of the catheter, acute decompression and secondary intracerebral hematoma can be avoided. In post operation CT Scan of all of the patients there were not any puenocephalous or a very small bulb of air. This small bulb of air were resorbed after a few hours of operation and was entered in the cranium while we were trying to passe and remove the catheter through the membrane of subdural hematoma.

There was not any complication in our patients including; infection, seizure or new neurological deficit. In one of the patient the main reason for rebleeding was coagulopathy, because he had continued the consumption of Aspirin and Diprydamol still after operation. Except one of the patient, who was missed from follow-up, in all of the patients CT Scan was performed in the first 14 days of operation which have shown complete absorption of CSDH.

REFERENCES

1. Aoki, N.A., 1992. New therapeutic method for chronic subdural hematoma in adults: Replacement of the hematoma with oxygen viapercutaneoussubdural tapping. *Surg. Neurol.*, 38: 253-6.
2. Emonds, N. and W.E., Hassler, 1999. New device to treat chronic subdural hematoma-hollow screen. *Neurol. Res.*, 21: 77-8.

3. Asfora, W.T. and L.A. Schwebach, 2003. Modified technique to treat chronic and subacute subdural hematoma: Technical note. *Surg. Neurol.*, 59: 329-32.
4. Asfora, W.T., L. Schwebach and D.A. Louw, 2001. Modified technique to treat subdural hematomas: The subdural evacuating port system. *SDJ Med. Dec.*, 54: 495-8.
5. Gruber, D.P. and K.R. Crone, 1997. Endoscopic washout: A new technique for treating chronic subdural hematomas in infants. *Pediatr. Neurosurg.*, 27: 292-5.
6. Nakaguchi, H., T. Tanishima and N. Yoshimasu, 2000. Relationship between drainage catheter location post operative recurrence of chronic subdural hematoma after burr-hole irrigation and closed-system drainage. *J. Neurosurg.*, 93: 791-5.
7. Matsumoto, K.A., M. Abekura, H. Ryujin, M. Ohkaw, N. Iwasa and C. Akiyama, 1999. Recurrence factors for chronic subdural hematomas after burr-hole craniostomy and closed system drainage. *Neurol. Res.*, 21: 277-80.
8. Suzuki, K., K. Sugita, T. Akai, T. Akai, T. Takahata, M. Sonobe and S. Takahashi, 1998. Treatment of chronic subdural hematoma by closed system drainage without irrigation. *Surg. Neurol.*, 50: 231-4.
9. Ersahin, Y. and S. Mutluer, 1995. A method for continuous external drainage in the management of infantile subdural collections. *Childs Nerv. Syst.*, 11: 418-20.
10. Richter, H.P., H.J. Klein and M. Schafer, 1984. Chronic subdural hematomas treated by enlarge burr-hole craniotomy and closed system drainage. Respective study of 120 patients. *Acta. Neurochir (Wien)*, 71: 179-88.
11. Caron, J.L., C. Worthington and G. Bertrand, 1985. Tension pneumocephalus after evacuation of chronic subdural hematoma and subsequent treatment with continuous lumbar, subarchnoid infusion and craniostomy drainage. *Neurosurgery*, 16: 107-10.