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RESEARCH ARTICLE

"ASSESMENT of CLOSED SUCTION DRAIN IN TWO LEVEL LUMBER DECOMPRESSION"

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Abstract

BACKGROUND- Closed suction drain is used for many years in spinal surgery. It not only prevents postoperative hematoma formation but also reduced wound infection as blood act as good culture media for bacteria to grow. It also reduces the post operative neurological deficit caused by hematoma. But studies do not indicate any benefit of using closed suction drain in single level laminectomy or discectomy.

MATERIAL AND METHOD- We retrospectively studies 400 patients operated for two level lumber decompression or discectomy during a period of three years (August 2011 to November 2014). Patients were divided in two groups based on the use of closed suction drain. All patients were given general anesthesia during the operation. They were compared for postoperative hematoma formation and wound infection.

RESULT- Mean blood loss was 80 ml in group of patients with closed suction drain and 74 ml in patients without drain. There was no significant postoperative hematoma formation in either group. Two patients in group A and one patient in group B had post operative wound infection that was clear after antibiotics according to the C/S.

CONCLUSION-This study does not show any evidence that closed suction drain are useful in preventing postoperative hematoma and wound infection in two level lumber decompression or discectomy . According to other studies, drain is useful in multiple level lumber decompression (more than two level), tumors and patients with bleeding disorders.

Introduction

Closed suction drainage in spinal surgery is used for the prevention of post-operative hematoma .Blood clots are the excellent culture media for bacteria to grow and causing wound infection. So it is believed that it prevent the infection by reducing the hematoma in the postoperative cavity. In literature drain has not been shown to provide benefit with respect to fracture and trauma surgeries. [1, 2].

In spine surgery postoperative hematomas and infection can cause very serious neurological consequences. [3,4,5]. In literature the incidence of postoperative extradural hematoma occurring after all spinal procedures requiring surgical intervention ranges from 0.2% to 2.9%.[6,7,8]. Closed suction drainage has been found useful in preventing these complications only in few studies. It is also reported that postoperative extradural hematoma

can cause fresh neurological deficits in some patients [3]. It remains unclear whether closed suction drainage reduces the postoperative complications in single level posterior discectomy.

We believe that closed suction drainage provide no benefit in reducing the postoperative complications in two level posterior lumber discectomy.

We will compare the incidence of postoperative wound infection and postoperative hematoma formation in two level posterior lumber discectomy.

AIMS & OBJECTIVE-

1. To assess the incidence of postoperative hematoma formation with or without closed suction drainage.
2. To assess the incidence of postoperative wound infections with or without closed suction drainage.

MATERIAL AND METHOD

This study was done in the Department of Neurosurgery. All patients operated in Neurosurgery for two level laminectomy for herniated disc or lumber canal stenosis were included in the study for a period of three yrs (August 2011 to November 2014). Patient of any age and gender was included. Those patients who were undergo multilevel spinal surgeries or having any infections prior to operation like pott's spine were excluded from the study. This study is a prospective study based on the patient's data like age, gender, diagnosis, type of surgery, operating time, intraoperative blood loss, revision of surgery for postoperative complications and other clinical data. After surgery drain was removed if daily blood loss was less than 50 ml.

In this study patients were divided in two groups based on the use of closed suction drainage. A group-in which closed suction drainage was used and B group-in which closed suction drainage was not used. All surgery were performed under general anesthesia for keeping the same compliance in all patients. Blood pressure during the surgery was remain normal and if blood pressure shoots up during surgery, it was returned to normal level before closing the wound, so that chance of excessive bleeding was reduced. Sugicell, Gel foam [haemostatic agent] and Bone wax was used in all the patients to reduce the epidural bleeding whenever necessary. All patients were receiving antimicrobial therapy as per guide line based on Centers for Disease Control and Prevention[12]. There were 3 dressings of the wound, first at 1^{st}, second at 4^{th} and third at $d7^{th}$ day. Stitches were removed on the 7^{th} day in all patients if there was not any wound complication.

The rate of postoperative wound complication requiring surgical intervention was compared by chi square test.

RESULT

In this study the mean age of group A was 42 years (minimum age-25 years and maximum age 70 years) and that of group B was 48 years (minimum age 30 years and maximum age was 68 years) .Mean blood loss in group A was 80 ml and that of group B was 74 ml. This difference was statistically not significant. Five patients in group A and four patients in group B had small amount (3-5 ml) of soakage at 4^{th} day dressing but on 7^{th} day wound was healthy. There was no major postoperative neurological deficit in any of these patients. Five patients in group A & three patients in group B were developed slight numbness in the dermatome of corresponding nerve root compression. Postoperative numbness was improved after giving steroid for short duration. There was wound infection in two patients in group A and one patient in group B. Antibiotic according to culture sensitivity was given and re-suturing was done when wound were healthy. So the overall rate of wound infection in this series was 0.7% (three out of 400 patients) and 1.05% in the group that received drain (two out of 190 patients) and 0.48% in the group that did not receive drain (one out of 210 patients). This difference was statistically not significant.

Table-1. Demographics of the groups

Parameter	Group-A	Group-B
Number of patients	190	210
Male: Female	130:60	160:50
Mean age (yr)	42	48

Mean operating time (min)	68	62
Mean estimated blood loss(ml)	80	74
Post operative hematoma requiring surgery	Nil	Nil
Wound infection (number of patients)	2	1

DISCUSSION

In spinal surgeries closed suction drainage is used to reduce postoperative hematoma formation and infections. However several studies have questioned the benefit of closed suction drainage in lumber spine surgeries. [8,9,].Most of the studies were conducted on single level laminectomy but none on the two level laminectomy. This study was conducted in the rural institute of medical science. In this study all the parameter were same as in other studies on single level laminectomy. Payne et al [10] conducted a prospective study to determine the indications for closed suction drainage after single level lumber laminectomy without fusion. They randomized 200 patients in two groups depend on the lumber drain. In this study 2 out of 103 patients with a drain and one of 97 patients without drain developed wound infection. They concluded closed suction drainage provided no benefit with respect to rates of infection and wound healing in lumber laminectomy without fusion.

M Kanayama et al [11] reviewed 560 patients in Hakodate Central General Hospital, Japan in July 2003.In this retrospective study all patients were of single level laminectomy. Patients were divided on the bases of closed suction drain. They found no benefit of putting a closed suction drainage in single level lumber laminectomy patients.

Brown and Brookfield [9] evaluated the efficacy of closed suction drainage in extensive lumber spinal surgery, including multilevel decompression and instrumentation surgery. In this study 83 patients were prospectively randomized in to 'drain' and 'no drain' groups. They also reported use of closed suction drain did not result in infection or hematoma even in extensive lumber spinal surgery.

Our study included a significant number of patients (400 patients). None of the patients developed significant epidural hematoma. The post operative wound infection occurred in three patients (two in closed suction drain group and one in non suction drain group). This infection rate was statistically insignificant. So this study concluded that there is no benefit of close suction drain in two level laminectomy for herniated lumber disectomy. Though this study is small and on a single center, we can increase the effectiveness of the conclusion by doing it on a large scale with collaboration of multiple centers.

Award et al [6] analyzed the records of 14932 patients undergoing spinal surgeries to identify the risk factors of developing postoperative epidural hematoma. They showed more than five operative levels, anemia [<10 g/dl], and excessive blood loss [>1 lit] increased the risk of epidural hematoma formation. Although well controlled anticoagulation was not associated with formation of symptomatic epidural hematoma, they found the patients who were had the coagulopathy from any cause had a high risk of these complications. Thus after keeping in mind all above and our studies, it is suggested that closed suction drain should be used only in complicated multiple level spinal surgeries, instrumentation surgery, tumors, tubercular and surgery in patients on anticoagulant therapy.

CONCLUSION-

This study does not show any evidence that closed suction drain are useful in preventing postoperative hematoma and wound infection in two level lumber decompression or discectomy . According to other studies, drain is useful in multiple level lumber decompression (more than two level), tumors and patients with bleeding disorders.

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