

Infection Rate of Percutaneous Kirschner Wire Fixation for Open Colle's Fracture**Md. Abdur Rashid¹, Md. Abul Kasem Pramanik², MH Haidary³ & M Enamul Haque⁴**

¹Assistant Professor & Head, Department of Orthopedics & Traumatology, Islami Bank Medical College, Rajshahi, ²Professor & Head, Department of Surgery, Islami Bank Medical College, Rajshahi. ³Professor & Head, Department of Paediatrics, Islami Bank Medical College, Rajshahi., ⁴Assistant Professor, Department of Forensic Medicine, Islami Bank Medical College, Rajshahi.

Abstract

The infection rate in 30 patients who underwent percutaneous kirschner wire fixation for open unstable Colle's fracture was reviewed. Among the patients, 13 were men and 17 were women aged 35 to 80 years (mean 57). Each fracture was fixed with 2 – 3 kirschner wires of 1.8 mm diameter, kirschner wires left protruding through the skin for easy removal with their ends bent outside the skin to prevent migration. The wounds were cleaned through surgical toileting and wound bebrisement. There was only one patient who presented with partial radial artery injury (longitudinal) contused and suture done with 6-0 vicryl. The wound was left open for 2-3 days and later delayed primary suture done.

Key words: Kirschner wire fixation

IBMC J 2011; 2(1) : 11-13

Introduction

Colle's fractures are more common in post menopausal osteoporotic women and old aged men. Extrarticular fracture are more common than intraarticular fractures.¹ The wound was cleaned through surgical toileting. Open reduction and kirschner wire fixation was done.

The kirschner passes through styloid process from distal fragments to the medial border of proximal fragments² and another kirschner wire passes through distal to the proximal fragment centrally.³ It is a common practice to leave kirschner wire protruding through the skin for easy removal. We reviewed the infection rate in 30 patients, who underwent open Colle's fractures and fixation by percutaneous Kirschner wire.

Materials and Methods

Records of 13 men and 17 women aged 35 to 80 years (mean 57) who underwent open reduction and percutaneous kirschner wire fixation between April 2008 and March 2009 for unstable open Colle's fractures were treated. At first each

fracture was cleaned through surgical toileting and wound debribement. All dead and devitalized tissue removed meticulously. The wound was cleaned by copious amount of normal saline. Each fracture was fixed with 2-3 kirschner wires of 1.8 mm diameter. Each wire was inserted from a stab wound made by a number 11 blade knife. The kirschner wire fixation was used in 30 patients. Whereas fixation is a radial styloid process to the proximal shaft of radius. Kirschner wires were left protruding through the skin for easy removal with their ends bent outside the skin to prevent migration. The wound was left open for 2-3 days for observation after 1st and 2nd post operative follow up, the wound was in very good color, viable and no infection occurred, then in 3rd postoperative day the wound was closed delayed primary suture by 3-0 prolin. The wounds were cleaned and dressed with gauge and plaster of paris cast was applied posteriorly with palmer flexion position. The patients were followed up at 2, 4 and 6 weeks in the pin site and stitches site was examined at 2 & 4 week.

Address for Correspondence : MA Rashid, Assistant Professor & Head, Department of Orthopedics & Traumatology, Islami Bank Medical College, Rajshahi, Bangladesh.



Figure 1 : AP view of wrist joint



Figure 2 : Lateral view



Figure 3 : Open wound



Figure 4 : Kirschner wire fixation



Figure 5 : 3rd postoperative day



Figure 6 : After wound closure

Result

Five (16.66%) of the patients developed pin tract infection, early removal of kirschner wires at 3 - 4 weeks. At our observation the infection rate is higher (60%) in between the age of 46 to 60 years. (Table I). Female is higher then male (40%) (Table II). More patients are affected in poor socio economic conditioned group (50%) (Table II)

Table I : Age distribution

Age	No of patients	Percentage
35 - 45 yrs	4	13.4%
46 - 60 yrs.	18	60%
61 - 80 yrs.	8	26.7%

Table II : Sex distribution

Sex	No of patients	Percentage	Sex	No of patients	Percentage
Male (35 - 45 yrs)	2	6.6%	Female (35-45 yrs)	2	6.6%
Male (46 - 60 yrs)	6	20%	Female (46-60 yrs)	12	40%
Male (61 - 80 yrs)	3	10%	Female (61-80 yrs)	5	16.7%

Table III : Socio-economic condition (On the basis of monthly income)

	No of patients	Percentage
Poor	15	50%
Middle Class	10	33.33%
Upper Class	5	16.66%

Table IV : Infection rate

Sex	No of patients	Percentage	Sex	No of patients	Percentage
Male (35 - 45yrs)	0	0%	Female (35 - 45yrs)	0	0%
Male (46 - 60yrs)	0	0%	Female (46 - 60yrs)	2	6.66%
Male (61 - 80yrs)	1	3.33%	Female (61 - 80yrs)	2	6.66%

Discussion

Colle's fracture is common in post-menopausal women and elderly male patients, fall on out stretched and dorsiflexion of the hand is usual mechanism of injury.¹ We commonly manage by close reduction under general anesthesia and immobilization by short arm back slab for 4 to 6 weeks. Colle's fracture is usually displaced posterolaterally and fracture line runs through the corticocancellus junction of the distal radius. In this study the open Colle's fracture was managed early within 4-8 hours (average 6 hours) by open reduction and percutaneous Kirschner wire fixation. The wound was properly toileted and left open for 2-3 days and then closed delayed primary suture.

Infection after percutaneous Kirschner wire fixation range from a minor erythematous reaction to osteomyelitis, septic arthritis, and septicaemia.⁴ Reported infection rates vary from 7%⁵ to 35%.⁶ In our study, infection rate was 16.66%. Slight decrease to the 20% was quoted for hybrid external fixators.⁷ The pin sites of the external fixator can be cleaned and dressed regularly, but pin sites in our percutaneous Kirschner wire fixation were covered by a cast. The longer of the Kirschner wires are left protruded, the greater the risk of pin tract infection.

In our observation, 5 patients had mild pin tract infection and wound is viable. The infection rate after percutaneous Kirschner wire fixation is unacceptable. The Kirschner wires should be buried under the skin to decrease the infection rate.

Conclusion

The infection rate of open Colle's fracture is more common, the presence of foreign implant also enhance the infection rate. But in our study the infection rate is very less (16.66%) due to proper toiletting and early surgery.

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