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Comparitive Study of Conventional And Topical Heparin Dressing in Lower Limb Diabetic Ulcers.

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Abstract :
Background : *lower limb diabetic ulcers are very difficult to treat due to the poor vascularity and brittle granulation tissue formed during the healing phase. So a novel method is needed apart from conventional dressings to enhance the healing process. Such a method is to do dressing of ulcers using 200IU/ml of sodium aqueous heparin dressings.*
Methods : *In this prospective study conducted from may-2016 to october-2016 at department of general surgery, coimbatore medical college the diabetic ulcer foot patients were divided into two groups, one will be treated with conventional saline dressing and the other using topical aqueous heparin, the wound healing was assessed using Bates-Jensen wound assessment tool and the hospital stay, antibiotic and analgesic requirement were recorded.*
Results : *On statistical analysis, the hospital stay and antibiotic requirement shows significant reduction in heparin group and not so for analgesics. Wound healing was better and earlier in heparin group.*
Conclusion : *Topical heparin dressing of lower limb diabetic ulcers shows significant improvement in healing, reduction in hospital stay and antibiotic requirement.*
Keywords: *Diabetes, Heparin, Antibiotic, neovascularisation.*

I. Introduction

Diabetic ulcers of lower limb are very difficult to treat and they contribute to a great account of morbidity and expenditure of human resources and manpower. Due to poor vascularity and brittle granulation tissue formed during wound healing phase accounts for this. A novel method is needed to overcome these factors and which promotes healing and lessens the hospital stay and morbidity. Dressing the lower limb diabetic ulcers using 200 IU/ml sodium aqueous heparin[1] solution USP (heparin) dripped on the ulcer surfaces is such a search towards our goal. Heparin promotes migration of capillary endothelial cell[2,3] and produces angiogenesis[4] and thus formation of healthy granulation tissue. It also reduces bacterial translocation[5] and necessary for antibiotics minimized. Heparin also enhances type 1 collagen synthesis[6,7] and hence the stable granulation tissue causes better healing.

II. Objectives Of The Study

Primary: To prospectively compare the healing of lower limb diabetic ulcers in patients with conventional saline dressing and topical heparin saline dressing.

Secondary

To analyse and compare the parameters of

1. hospital stay
2. antibiotic requirements based on culture and sensitivity and
3. analgesia requirement.

Study Design

Prospective cohort study carried out after obtaining local ethical committee clearance.

III. Methodology

Inclusion Criteria

Patients admitted from MAY-2016 to OCTOBER-2016 with diabetic ulcer of lower limb at department of general surgery, Coimbatore medical college are included in the study.By systemic random sampling those patient will be divided into two groups. (H) group- wound will be dressed with heparinised saline using 200 IU/ml sodium aqueous heparin solution USP (heparin) dripped on the ulcer surfaces.

(c) group- wound will be dressed with conventional way of normal saline or metronidazole dressing.

Exclusion Criteria

1. patients with features of sepsis,
2. peripheral arterial occlusive disorders,
3. any allergy to heparin, were excluded from this study.

IV. Analysis

Wound healing was assessed using Bates- Jensen scoring system, and requirement of analgesics, antibiotics and duration of hospital stay were recorded and data analysed.

Table 1 - sex distribution in both conventional and heparin group

Sex	Conventional Group	Heparin Group
Male	27	24
Female	5	8

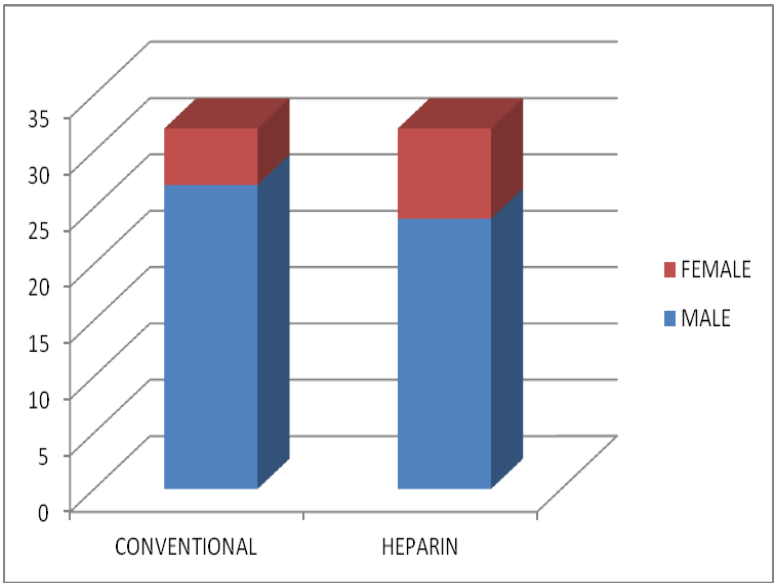

Fig 1 – sex distribution in both conventional and heparin group

Table 2 – Comparision of mean days of hospital stay

S.No	Group	Mean Hospital Stay(Days)
1.	Conventional Group	16.4
2.	Heparin Group	13.6

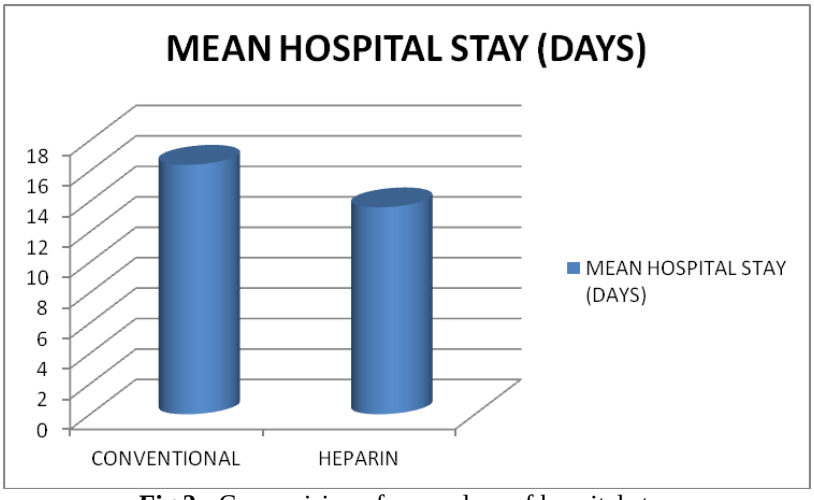

Fig 2 - Comparision of mean days of hospital stay

Table 3 – Antibiotic requirement in both group

Antibiotics	Conventional Group	Heparin Group
Empirical Sensitive	20	28
Drug Revised By C&S	12	4

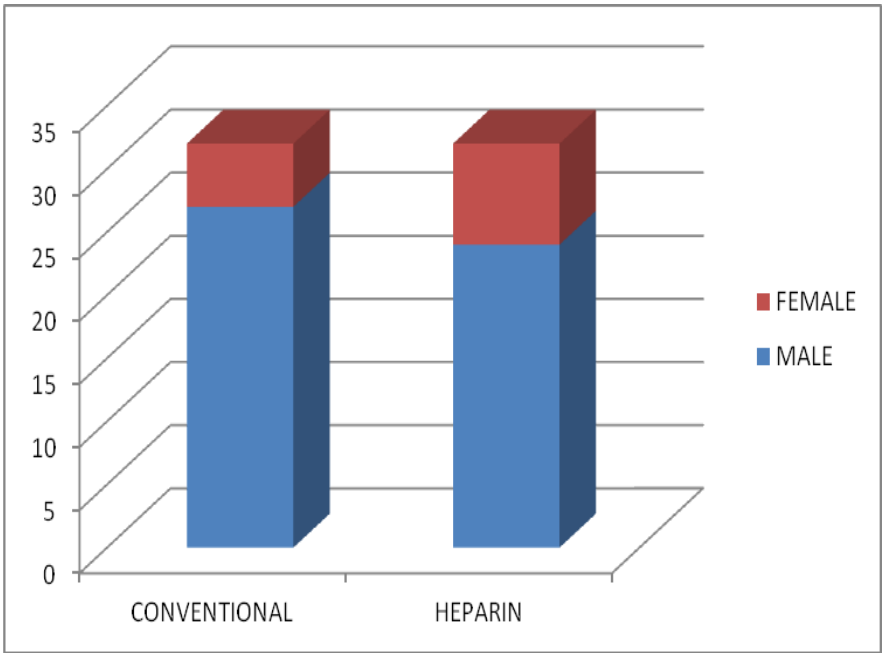

Fig 3 – Antibiotic requirement in both group

Table 4 – Analgesic requirement in both group

Analgesic Needed	(Mean Doses/Day)
Conventional Group	2.1
Heparin Group	2

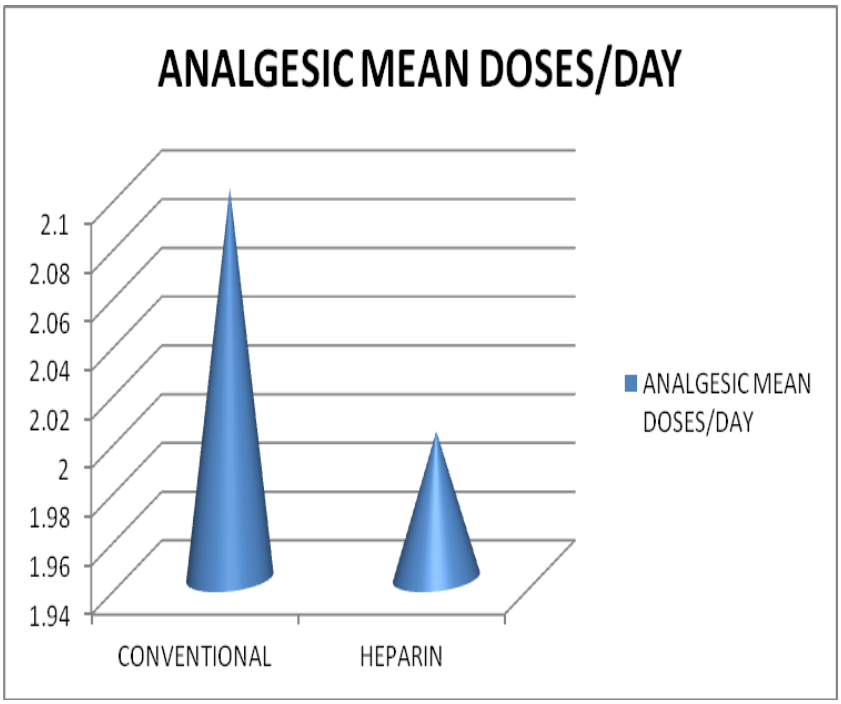

Fig 4 – Analgesic requirement in both group

Table 5 – Amputation rate in both group

Group	Amputation/ Disarticulation Needed
Conventional Group	2
Heparin Group	0

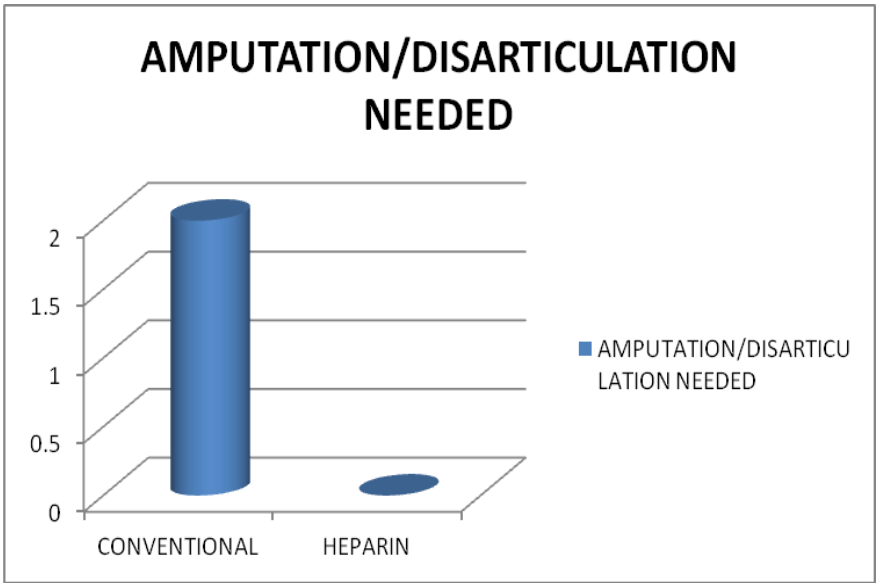

Fig 5 – Amputation rate in both group

Table 6 – serial Bates – Jensen wound healing score

Duration (Weeks)	Mean Bates- Jensen Wound Score	
	Conventional Group	Heparin Group
0	27	28
1	24	23.6
2	21.3	14
3	16	11.2

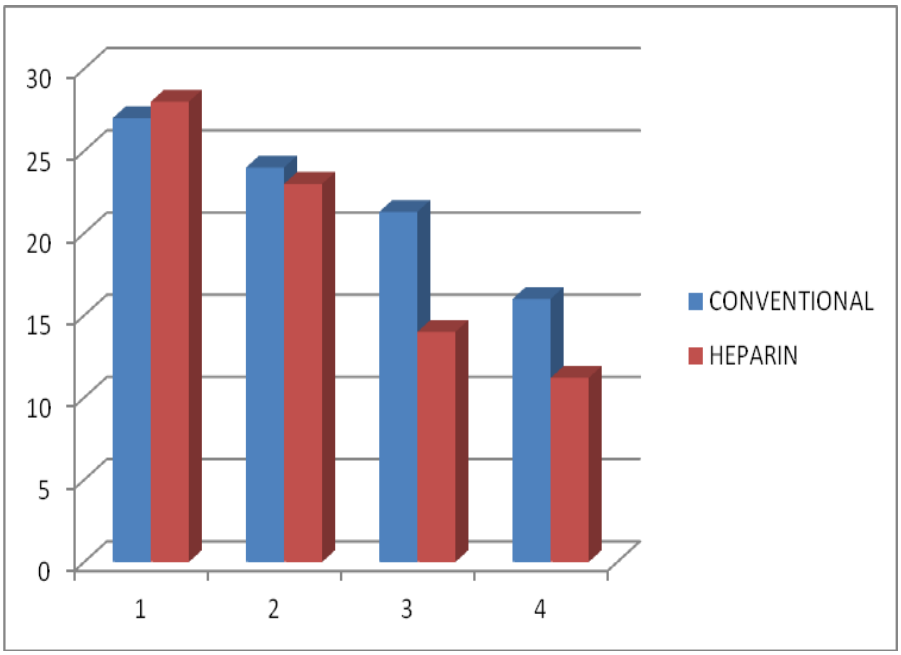

Fig 6 – serial Bates – Jensen wound healing score

V. Conclusion

Using heparinised saline for dressing the lower limb diabetic ulcers provided peripheral arterial occlusion ruled out the would healing rate was faster compared to regular saline dressing. Requirement and change of antibiotics were less and due to faster recovery duration of hospital stay were also significantly reduced. Therewere no much difference in analgesic requirement. Failure of healing process and going for amputation were observed in conventional dressing group but this needs a separate study in a large sample.

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