

**ORIGINAL ARTICLE****STUDY OF TOPICAL PLACENTAL EXTRACT VERSUS POVIDONE IODINE AND SALINE DRESSING IN VARIOUS DIABETIC WOUNDS****Sudhir K Navadiya<sup>1</sup>, Yagnesh L Vaghani<sup>2</sup>, Mukesh P Patel<sup>2</sup>**<sup>1</sup>Final Year Resident; <sup>2</sup>Assistant Professor, Department of General Surgery, Surat Municipal Institute of Medical Education and Research (SMIMER), Surat**Correspondence:** Dr. Sudhir K Navadiya, Email:drsudhir13@yahoo.com**ABSTRACT****Objective:** The study was conducted with an objective to compare topical placental extract versus povidone iodine and saline dressing in various diabetic wounds.**Method:** 60 cases of diabetic wound included which was admitted in SMIMER during September 2010 to August 2012. After complete debridement of wound 30 cases were applied povidone iodine and normal saline, and rest 30 case were applied placental extract till second surgery or wound treated. Outcome was compared in form of healing rate, infection clearance; time of second surgery; hospital stay and duration of treatment. Approval for this study was taken from IEC of the institute.**Result:** In study average duration on complete granulation tissue in placental extract dressing is 15.2 day in comparison to povidone iodine which had 24.46 day. In placental group 12 cases treated conservatively and 18 cases needed surgical intervention in comparison to povidone group in which result was 10 cases and 20 cases respectively. Total duration of treatment and hospital stay is less in placental group in comparison to povidone group.**Conclusion:** Diabetics are predisposed to development of foot lesions. It increases rate of infection mainly due to higher glucose concentration. Longer the duration of diabetes are more prone for surgical complication. In study, the use of placental extract increases a rate of wound healing due to presence of amino acids, vitamins, nucleotides in it. Patients have early recovery of average 7-10 days.**Key Words:** Diabetic foot, Placental Extract, Povidone Iodine and Normal saline**INTRODUCTION**

Diabetes is usually a lifelong disease. As the healthcare facility is gradually improving more and more patients are presenting with chronic complications of diabetes like neuropathy, foot lesion, and retinopathy. The term "diabetic foot" means surgical lesion of foot in diabetic patient.<sup>1</sup> It is the most common complication of diabetic patient and is not totally avoidable but with positive approach morbidity and mortality due to diabetic foot problems can definitely be reduced.<sup>1</sup> In operative patient history of diabetes requires a special care, even after that there are higher rate of post operative complication such as wound infection compare to non-diabetics. Higher tissue glucose level is mostly responsible for all events.

**MATERIAL AND METHODS:**

In study, we have included total 60 cases of patient with diabetic foot lesions as well as wound on other

part of body in diabetes patient either due to trauma, infection or post operative wound infection. Approval was taken from IEC of our Institute for the study. Study was conducted at Surat Municipal Institute of Medical Education and Research (SMIMER), Surat on patient admitted to surgical as well medical ward from September, 2010 to August, 2012. The patients selected were having wounds in lower limbs, upper limbs and post operative wounds. All patients were investigated and treated by available facilities in the hospitals. Due to non-availability of investigation and non-affordability of patient few investigations were not done even though necessary. After complete debridement of the wound, 30 selected cases were dressed with placental extract (Group A) till second surgery done or wound treated.<sup>2, 3</sup> And other 30 cases selected from similar site and almost similar wound were dressed with dilute povidone iodine initially till infection (purulent discharge) cleared and then with simple saline (Group B), till up to second surgery or

wound healed. All patients were given similar antibiotic initially, but occasionally changed according to culture sensitivity. The result compared in the form of clearance of local infection; rate of healing; time of second surgery; total hospital stay and duration of total treatment.

## RESULT

In the study 60 cases were taken for evaluation. In that average age of patient in group A was 55 year and in group B was 57 year. Group had male: female ratio was 4:1 and group B had 3.3:1. Average time of diabetic history in Group A was 6.1 year and in group B was 7.7 year. 35% patient presented with Ulcer, due to sensory loss, 30-35% with cellulitis/abscess while 15% with gangrene of toe or foot.

**Table 1: Progress of wound after use of both methods for wound management**

Progress	Placental group A (n=30)	Povidone group B (n=30)
Conservative	12 (40.0%)	10 (33.3%)
2° Suturing	08 (26.7%)	07 (23.4%)
Skin Grafting	10 (33.3%)	13 (43.3%)

After dressing average time for complete granulation tissue was  $14.2 \pm 1$  day in group A, while  $23.0 \pm 1.4$  day in group B. *p*-value of this comparison was 0.001 which is highly significant suggesting effectivity of placental extract dressing in diabetic wound as compare to group B.

After wound improvement patient was sent for further management. In group A 40% patient treated conservative while in group B 33.3% [Table-1].

**Table 2: Total Hospital stay as a part of treatment**

Days	Placental group A (n=30)	Povidone group B (n=30)
1-20	17 (56.6%)	09 (30.0%)
21-40	11 (36.7%)	14 (46.7%)
40-60	02 (06.7%)	05 (16.7%)
>60	00 (00.0%)	02 (6.6%)
Average Day	$19.8 \pm 2$ day	$28.2 \pm 2$ day

Mean difference = 8.4 (95% CI 7.36 - 9.43) *p* < 0.001

**Table 3: Total duration of treatment taken for Diabetic wound management**

Days	Placental group A (n=30)	Povidone group B (n=30)
1-20	06 (20.0%)	04 (13.4%)
21-40	22 (73.3%)	18 (59.9%)
40-60	02 (06.7%)	06 (20.0%)
>60	00 (00.0%)	02 (06.7%)
Average Day	$25.4 \pm 1.5$ day	$32. \pm 1.5$ day

Mean difference = 6.6 (95% CI 5.82 - 7.37) (*p* < 0.001)

The average hospital stay was  $19.8 \pm 2$  day in group A and  $28.2 \pm 2$  day in Group B. Total duration of treatment for group A was  $25.4 \pm 1.5$  day and group B was  $32. \pm 1.5$  day. [Table-2, 3]

Averagely placental group had lesser hospital stay, lesser overall treatment time and better wound healing.

## DISCUSSION

Prevalence of diabetes in India is around 8%.<sup>4</sup> Diabetes is increasing in India and other countries due to changes in food habits and lifestyle similar to western style. And better health service and facility available but more patients come with chronic complication. Diabetics are predisposed to development of foot lesions. This is because of complex association of various factors like Ischemia, Neuropathy and Infection. Micro-angiopathy, hypercoagulable stat, atherosclerosis, and hyperglycemia may leads the above complex and finally diabetes lesion and complication.<sup>5, 6, 7</sup> Elderly diabetic is divorced from his feet, unable to see them due to poor sight and unable to feel duet to sensory loss. Hence predispose to diabetic foot. Precipitating factors are mechanical, thermal, chemical or surgical wound.<sup>8</sup> Many techniques are available for wound dressing. All basically reduce infection and improve granulation growth. Povidone Iodine is routinely used antiseptic solution. It is used initially for discharging wound in presence of infection and then dressing done with normal saline. Normal saline cover up the wound and maintain the environment for healing. While placental extract prepared from fresh term healthy human placenta after delivery. Amniotic membrane and cord removed. HIV, HCV, HBsAg status checked. Tissue sterilized by chemical sterilization. It is then preserved in gel form each gram of which contain 0.1 gm of fresh human placenta.<sup>9</sup> Placental extract increases collagen synthesis, increases tissue protein, accelerates neoangiogenesis, and epithelialization. It having immunotropic effect and having EGF, Fibroblast growth factor. It supports ossification and reduces surrounding tissue inflammation and edema.<sup>10, 11, 12</sup>

Group B requires 8.3 day more as compare to group A (Placental extract group) suggesting more effectivity of Placental extract as compare to povidone iodine and saline dressing in diabetic wounds. *P* value of this comparison in both group for hospital stay and total treatment period was <0.001 which was highly significant suggesting effectivity of Placental extract group. Table -1 also showing more patient treated Conservative and also less need of skin grafting compare to Povidone iodine and saline. It directly affects patient hospital stay and somehow quality of life. Average Hospital stay of patient is  $19.8 \pm 2$  day in group A and  $28.2 \pm 2$  day in group B with minimal stay 6 days in group A & maximum stay 68 days in group B.

The goal of all the modality of treatment is to improve the wound with better patient compliance. And the

Placental extract is better in many way as with easy availability at institutional hospital set up and now in the form of readymade placental extract ointment.

## CONCLUSION

Diabetes predisposes to the development of foot lesions and is more prone to infection with low healing rate. Placental extract improves healing because of amino acids, nucleotide and vitamins that improves healing.<sup>12, 13</sup> Decreased hospital stay and treatment time reduces the burden on hospital as well as early recovery on the part of patient. Other important thing is required to concentrate more on preventive measure and patient's self care in diabetic patient.

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