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Research Article

EXPERIMENTAL EVALUATION OF *MOORVA* AS A NON ABSORBABLE MONO FILAMENT SUTURE

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ABSTRACT

Suturing material plays a very important role in surgical procedures. The purpose of suturing (*Seevankarma* as called in the Ayurvedic terminology) is to approximate the wound edge for faster healing. This study was an attempt to assess *Moorva* mono filament fiber for the suturing purpose. An attempt to compare it with ethilon 3-0 as non-absorbable suture in rats was done. Fully grown *Moorva* leaves were taken. Its fibers were separated under running water and subjected to autoclave. *Moorva* fiber tensile strength and thickness was measure before and after autoclave. Ethilon 3-0 tensile strength and thickness was measured. Rats were Anesthetized intramuscularly using 1ml syringe, after that suturing was done on prepared area. Redness, Discharge, Temperature, Approximation, Odema were observed for eight days and biopsy was taken on day eight. Temperature was measured on infrared thermometer. 12 rats were used for this study Trial group and control group skin closures were done on the same rat on different sites. Both the groups shows equivalent results for Redness, Odema, Discharge, Approximation, Temperature. Histopathological changes for inflammatory infiltrate, vascularity, fibrosis were same in both the groups. *Moorva* fibers tensile strength and thickness was less than ethilon 3-0 and this tensile strength and thickness was sufficient to hold the wound edges. The study proves that the *Moorva* fiber can be made and acceptable suturing material and it can be used for skin closures. Scope for further study Along term study on tissue absorbability property of *Moorva* fiber suturing material and detail chemical study of *Moorva* fiber.

KEYWORDS: *Moorva* fibers, Ethilon 3-0, skin suturing with monofilament, Non-absorbable mono-filament, Albino rats.

INTRODUCTION

There are 8 *Shastrakarmas* as follows: *Chhedan* (Excision), *Bhedan* (Incision), *Lekhan* (Scraping), *Vedhan* (Puncturing), *Eshan* (Probing), *Aaharan* (Extraction), *Vistravan* (Drainage), *Seevan* (Suturing).[1]

The first description of suturing materials was given by *Acharya Sushruta* which composed of plants and animal origin material.

Ashmantak, *Valkal*, *Shana Sootra*, *Atasisootra*, *Snayu*, *Kesh*, *Moorva Sootra*, *Guduchi Sootra*, is taken and *Vellitaka Seevan Karma* (Continuous suturing) is done.[2]

The purpose of *Seevankarma* is to approximate the wound edge for faster healing. Aim is to unite to repair and support the injured tissue till the healing is completed. This will achieve complete homeostasis and normal restoration of anatomical structure and the physiological tissue function.

The properties of an ideal suturing Material having a good tensile strength, Can be sterilize, Easy to handle, Causes least irritation, Economical, Non allergic.

Moorva having a tensile strength good enough to prepare a bow so also called bow string hemp.[3]Till the 12th century AD, there was confusion in the specificity of the drug. However, today there are 8 species which are considered as *Moorva*; *Sansevieria roxburghiana* (family-Rusaceae) is one amongst them.[3]

AIMS AND OBJECTIVES

1. To process the leaves of *Sanseviera Roxburgiana*, to make it an acceptable suturing material and study its physical properties.
2. To observe the tensile strength of *Moorva* fiber at various stages.
3. To note its merits and demerits as suturing material and compare it with Ethilon3.0.
4. To observe tissue reaction of both suturing material histopathologically.

MATERIAL AND METHODS

1. *Moorva* (*Sanseviera Roxburgiana*) was authentified. Fully grown leaves of *Moorva* were taken.
2. The leaves were crushed and fibers were separated from it.
3. These were subjected to autoclaving.
4. The tensile strength of fiber was measured before and after autoclaving.
5. A knownEthilon3-0 was used as suturing material for control study.
6. Sample size – 12 Albino Wistor rats were used for the study.

METHODS

Each rat will be anesthetized with- Xylazine 5mg/kg + Ketamine 50mg/kg, all aseptic precautions were taken. Two incisions were made on the back right and left

regions up to the fascia of prepared area. Simple sutures were used for this study. Temperature was measured on infrared thermometer. On eighth day Histopathological examination of sutured site tissue was done in both groups to compare.

Grouping:

Group A: Trial group (*Moorva*)

Group B: Control group (Ethilon 3.0)

Criteria of Assessment

Moorva

Thickness before and after autoclaving

Tensile strength before and after autoclaving

Local Signs

Redness

0	Normal
+	Mild
++	Moderate
+++	Severe

Temperature

Site A

Site B

Oedema

Present

Absent

Discharge

0	Normal	Absent
+	Mild	Slightly wet gauze
++	Moderate	Partially wet gauze
+++	Severe	Fully wet gauze

OBSERVATONS

All of the above parameters were observed on a daily basis for 8 days and on day 8th Histopathological sample was collected. Total duration of study -8 days.

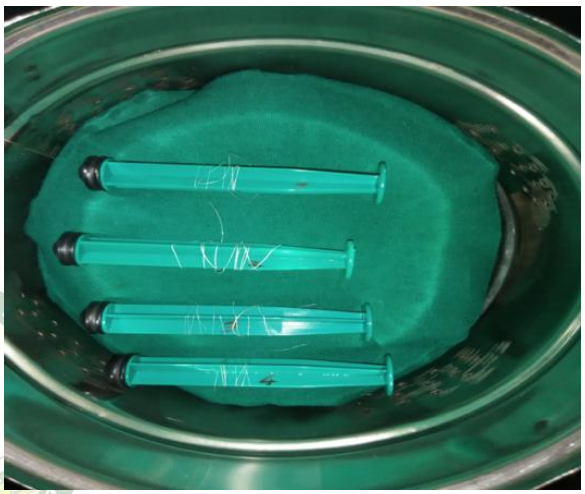

Figure 1: *Moorva* and its fibers subjected to autoclave

Figure 2: Tensile strength mesurment on universal tensile tester

Figure 3: Tensile strength of *Moorva* fiber, unit Mpa

Fiber no	Before autoclave	After autoclave
1	99.78	62.36
2	103.36	88.56

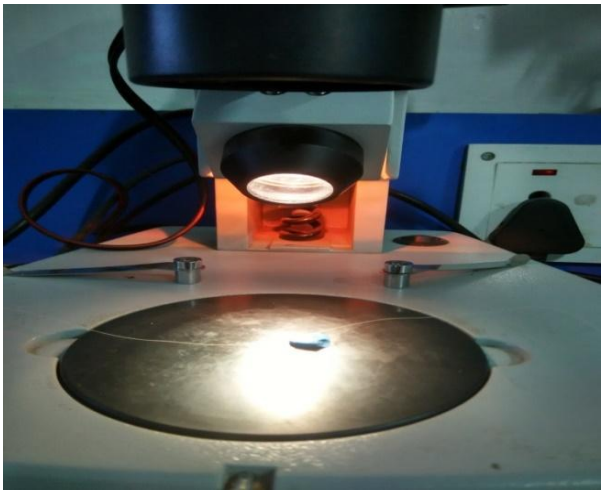

Figure 4: Thickness measurement on the electronic

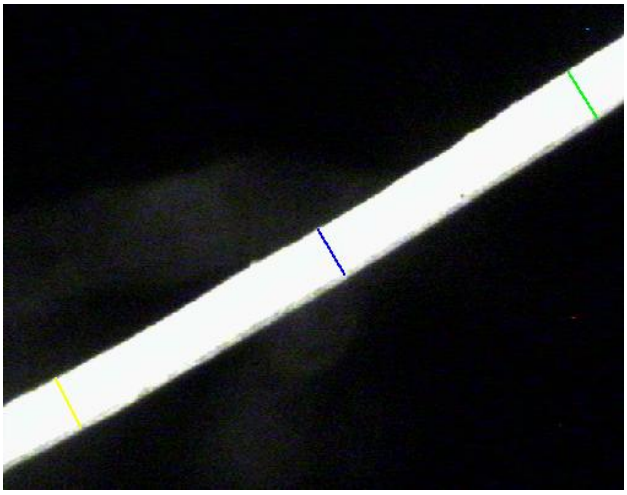

Figure 5: Thickness of *Moorva* three sites thickness was measured

Fiber no.	Before Autoclave			After Autoclave		
	Location 1	Location 2	Location 3	Location 1	Location 2	Location 3
1	112.70	107.30	112.80	104.20	102.20	106.10
2	128.00	129.80	129.20	131.00	116.10	122.10

Ethilon 3-0

Tensile strength	378.99Mpa
Thickness	236

Figure 6: Suture site and suture removal

Figure 7: Histopathology biopsy procedure

Redness: -Since observations are on ordinal scale taken continuously for 8 Days, we used Friedman's test to test change in median over the time. From above table we can observe that P-Values for both the groups are greater than 0.05 hence we conclude that there is no significant change observed in both the groups for Redness.

Oedema: Since observations are on ordinal scale taken continuously for 8 Days, we used Friedman's test to test change in median over the time. From above table we can observe that P-Values for both the groups are less than 0.05 hence we conclude that there is significant change observed in both the groups for Oedema.

Discharge: Since observations are on ordinal scale taken continuously for 8 Days, we used Friedman's test to test change in median over the time. From above table we can observe that P-Values for both the groups are less than 0.05 hence we conclude that there is significant change observed in both the groups for Discharge.

Approximation: Since observations are on ordinal scale taken continuously for 8 Days, we used Friedman's test to test change in median over the time. From above table we can observe that There were no change in Approximation over the time.

Temperature: Since observations are quantitative taken continuously for 8 Days, we used Repeated Measures ANOVA to test change in Mean over the time. From above table we can observe that P-Values for both the groups are less than 0.05 hence we conclude that there is significant change observed in both the groups for Temperature.

Histopath: For comparison of histopath in two groups, we have used Mann Whitney U test, From above table we can observe that P-Values for INFAMMT and FIBROUS are greater than 0.05 hence there is significant difference both groups while P-Value for VASCULA is less than 0.05 hence we conclude that there is significant difference in Group A and Group B.

DISCUSION

Tensile Strength and Thickness

Tensile strength and thickness of *Moorva* was less than ethilon 3-0.

According to approximation criteria there was no wound gape.

In all sample sizes and in both the groups the approximation of wound edges were maintained from first day to eighth day *Moorva* and ethilon 3-0 was in situ till the eighth day.

Local Criteria of Assessment

The assessment criteria observed for the eight days was mentioned below:

Redness: It was observed on the fifth rat on third and fourth day in both the groups, and on fifth day it was observed only in group B. Redness was observed on the tenth rat on fifth day in both the groups, and on sixth day it was observed only in the Group A.

Oedema: In both the groups Oedema was observed for initial three days.

Discharge: Mild Discharge was observed on both groups

Temperature: It was significant in both the groups.

Approximation: There was no wound gape on both groups.

Histopathology Reports

Absent	0
Mild	+
Moderate	++
Severe	+++

Rat no.	Inflammatory infiltrate		Vascularity		Fibrous tissue	
	A	B	A	B	A	B
Rat 1	+	+	+	+	++	++
Rat 2	+	+	+++	+	+	++
Rat 3	+	+	+	++	++	++
Rat 4	++	++	++	++	++	++
Rat 5	++	+	+++	+	++	++
Rat 6	++	++	++	++	++	++
Rat 7	+	+	+	+	++	++
Rat 8	+	+	+++	++	++	++
Rat 9	+	+	++	+	++	++
Rat 10	++	+	+++	+	++	++
Rat 11	+	+	++	+	++	++
Rat 12	+	+	++	++	++	++

Inflammatory infiltrate and fibrosis and vascularity were same in both groups.

CONCLUSION

Moorva fibers were present in situ during whole study means it can be used as non- absorbable mono filament suture.

Tensile strength and thickness was reduced after the autoclave of *Moorva*.

Moorva monofilament fibres tensile strength and thickness was less than ethilon 3-0 but on the basis of observation these tensile strength and thickness was sufficient to hold the both wound edges.

Inflammatory changes were comparable and equivalent in both group.

The *Moorva* monofilament fibers can be made acceptable suturing material and can be used for skin closure as a Non-absorbable monofilament suture material.

REFERANCES

1. Shree Bramha Shankar Mishra and Shree Roop Laalji Vaishya, Bhavaprakash Nighantu, edited with the Vidyotini Hindi commentary, by published by Chaukhambha Sanskrit Bhawan, at 2007.
2. Dr. Anant Ram Sharma, Sushrut Samhita of Maharshi Sushrut, Sutra Sthan, Edited with Sushrutvimarshini Hindi commentary, Chaukhambha Subharti Prakashan Varanasi, at 2008.
3. Thakur Balwant Singh and Dr. K. C. Chunekar, forwarded by Pandit Shiv Sharma, Glossary of vegetable drugs in Bruhatrayi, published by Chukhambha Amarbharti Prakashan Varanasi, at 1999.

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