The Professional Medical Journal
www.theprofesional.com

DOI: 10.29309/TPMJ/18.4023

ORIGINAL PROF-4023

URETHEROPLASTY;
COMPARISON OF URETHEROPLASTY WITH VICRYL AND PDS IN PEADS.

Fakhra Fakhr[1]

1. BSc (Hon) OTT
MS Microbiology
The School of Allied Health Sciences Children Hospital & Institute of Child Health Lahore.

Correspondence Address:
Fakhra Fakhr
Address: E-29/21 A,
Bank Stop Walton Road Lahore Cantt.
fakhrafakhr@yahoo.com

Article received on:
18/05/2017
Accepted for publication:
15/10/2017
Received after proof reading:
02/01/2018

ABSTRACT… Objectives: The objective of this study is to compare urethroplasty with vicryl and PDS. **Study Design:** Comparative prospective study. **Setting:** Department of Pediatric Surgery, The Children's Hospital and The Institute of Child health, Lahore. **Period:** 6 months. **Methods:** The sample size was twenty patients that were divided into two groups of equal strength. In first group Vicryl was used an in the second group PDS was used. A perfoma was formed which was filled by observing the patient's condition until they discharges after that patients were called in OPD and wound nature was observed. **Results:** There was a significant difference between both groups. Results showed that PDS was better than vicryl. Because vicryl is braided while pds is monofilament. So bacteria can easily entrap in vicryl .Tensile strength of PDS is also better than vicryl. **Conclusion:** In the current study the most common reason of infection because of vicryl is that it is braided and bacteria can easily entrap and can cause infection. While pds is monofilament. Monofilament suture goes through tissues with less resistance then multifilament. Monofilament resists infection. Multifilament suture allow wicking (a method by which bacteria can enter the tissue). So pds is better than vicryl.

Key words: PDS (polydioxanone), SPSS (statistical package for social sciences).

Article Citation: Fakhr F. Uretheroplasty; comparison of uretheroplasty with vicryl and pds in peads.. Professional Med J 2018;25(1):5-9.
DOI:10.29309/TPMJ/18.4023

INTRODUCTION

Development of genitourinary system is very complex.[1] There are numerous anomalies of urethra, some are isolated while some are combined with other disorders. Such as epispadias, diverticulum, hypospadias etc. My study is concerned about Hypospadias.[2] It is define as congenital penile defect characterized by an abnormal urethral opening not on the apex of glans butt on penile surface, scrotum or perineum.[3] There are three types of hypospadias. Anterior, medium and posterior hypospadias. In anterior hypospadias meatus is present near the apex of penis (70 % of the Cases. In medium hypospadias Meatus is present near the medium part of penis and in posterior hypospadias Meatus is present in the scrotum or at the base of penis.[4] In order to minimize psychological impacts the best age for hypospadias is the first 18 months of life.[5] As this is a congenital pathology So there are 20 % possibilities that this pathology affects another member of same family.[6] There are more than 200 techniques butt most frequently used techniques are Snodgrass's technique, Mathieu technique, Bracka's two stage technique.[7]

There are two sutures that are mostly used in hypospadias. Vicyrl & PDS.[8], Vicryl is co-polymer of lactide and glycotide and 40% is absorbed in two weeks and 70% is absorbed in three weeks. it is braided that's why there are more chances of infection.it cause less tissue reaction and it knots well. PDS is a raw material of polyester polymer. it is absorbed in almost 6 weeks. It has mild tissue reaction. it can be used in infected areas because it is monofilament.[8], Rayan et al., (2014) studied the comparison of vicryl and PDS in uretheroplasty. They proved that PDS is better then vicryl because there is a major difference in the composition of these two sutures. vicryl is braided and PDS is monofilament. So due to entrapment of bacteria there are more chances of infection. He examined the effect of prolonged storage (up to 27 days) in human urine on 6/0 gauge Vicryl, Vicryl Rapide,

Monocryl and polydioxanone (PDS) sutures. These sutures were most commonly used for hypospadias. Exposure to urine reduced the tensile and breaking strength of all the suture materials tested. PDS demonstrated the greatest resilience. Vicryl Rapide was the weakest suture and degraded completely by day Six.[9], Verlag (2013) examined ninety seven children with hypospadias in two and a half years period. He made two distinct groups of patients according to the suturing type and suture material. In the first group vicryl was used and in the second group PDS was used. Patients were followed-up from 6 to 12 months. Urethrocutaneous fistula rate was significantly higher in group I (16.6%) compared to group II (4.9%) so it was proved that complication rate can be reduced by the use of polydiaoxanone (PDS).[10], Cimador et al., (2004) studied the effect of suture material in Uretharoplasty. It was a retrospective study and data was collected from the last ten years. 336 boys were considered for that study. Polyglactin (Vicryl), a Polyfilament with intermediate absorption, was used in 254 group A patients, whereas Polydioxanone (PDS), a monofilament with prolonged absorption, was used in 82 group B patients. The success of a one-stage repair and stricture and fistula rates were evaluated. A successful one-stage repair was achieved in 82% of the group A and in 83% of the group B patients.[11], Hsiao et al., (2000) studied the post operative complication of laprotomy because of incisional hernia. This study is a prospective, randomized comparison of early-absorbable polyglactin 910 suture versus late-absorbable polydioxanone loop suture for fascial closure after abdominal surgery. A 2 year follow-up revealed that, Facial closure with polyglactin 910 suture was associated with more incisional hernias than that with polydioxanone loop suture. In conclusion, abdominal closure with a late-absorbable polydioxanone loop suture may be beneficial to patients with a malignant disease for preventing incisional hernia.[12], Bourneet al., (1998) studied about the tensile strength of vicryl and pds. The in-vivo half-life tensile strength of the braided absorbable sutures polyglycolic acid (Dexon Plus) andpolyglactin 910 (Vicryl) is 2 weeks, whereas those of the monofilament absorbable sutures polyglyconate (Maxon) and polydioxanone (PDS) are 3 and 6 weeks respectively. Addition of a single hitch or six knots reduced the in-vitro tensile strength by 30% to 35%. Polyglyconate (Maxon) suture demonstrated the best in-vitro knot security as compared to vicryl.[13], Ulman et al., (1997) studied the effect of suturing technique on hypospadis. ninety seven children were treated surgically by Mathieu procedure.In the first group of 36 patients (group I), neourethra was constructed using 6/0 polyglactine (Vicryl) in a single layer, full-thickness, uninterrupted fashion. Skin flaps were approximated using interrupted simple 5/0 polyglactine (Vicryl) sutures. In the second group of 61 patients (group II), 7/0 polydioxanone (PDS) was used in the urethral anastomosis performed in a subcuticular, uninterrupted fashion. Pati9ents were followed up from 12 – 16 months. Uretherocutaneous fistula rate was significantly higher in group 1, in which vicryl was used (16.6%) compared to group II (4.9%) in which polydiaoxanone was used.

Hypothesis

The hypothesis of this study is to prove best suture for uretheroplaty so that in future we can use the suture with minimum rate of infection and with less chances of post operative wound complications.

MATERIALS AND METHODS

Study Design

Comparative prospective study

Settings

The data was collected from the Department of pediatric surgery, The Children's Hospital and The Institute of Child health, Lahore

Duration of Study

Completion time of study was 6 months after the approval of synopsis.

Sampling Technique

Consecutive random sampling

Target Population

Patients who were undergone urethroplasty

Sample Size
Sample size was twenty patients that were divided into two groups of equal strength i.e 10 patients.

Study Group
Group I: In this group Vicryl was used
Group II: in this group PDS was used.

SAMPLE SELECTION

Inclusion Criteria
- Anterior hypospadias
- Only male patients with anterior hypospadias
- Age limit 0 – 13 years

Exclusion Criteria
Patients with
- Imuno compromised patients
- Skin diseases
- Metabolic disorder

Data Collection Procedure
A perfoma was formed. After taking the consent it was filled by observing the patient's condition until they discharge from surgery ward after that the patients were called in OPD and wound nature was observed.

Data collection tools
Data collection tool was perfoma used to collect information from the subjects about the pain, redness, bleeding, swelling/edema, flap necrosis, fistula.

Data Analysis
The data was analyzed by using the SPSS 17.0 statistical software. Baseline characteristics including means and standard deviations (SD) were described.

RESULTS
Table-I shows the frequency distribution of gender in post operative uretheroplasty. in our study there were 20 (100%) male patients.

Table-II shows the percentage of suture used. there are total 20 patients.10 (50%) patients were treated with vicryl and 10 (50%) were treated with PDS (polydioxanone).

Table-III shows the frequency and percentage of post op wound nature.out of 20 patients 7 (35%) were having redness/erthyma, 5 (25%) were having swelling/edmea, 14(70%) were having bleeding, there is no fistula, 17(85%) patients were having flap necrosis, 13(65%) patients were having infection

Table-IV shows the frequency and percentage of post op wound nature according to suture used in the surgery. 3 (15%) patients were having redness in pds out of 10 while 4 (25%) patients were having redness/erythema in vicryl. There is no patient of swelling in pds while in vicryl there were 5 (25%) patients were having swelling/edema.5(25%) patients were having bleeding in pds while there were 9 (45%) patients vicryl. There were no fistula in both groups. There is no flap necrosis in pds while in vicryl there were 3(15%) patients with flap necrosis. Three were 2(10%) patients who were having infection in pds while in vicryl there were 5 (25%) patients.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	20	2	11	5.40	2.010

Table-I. Descriptive statistics of age

Suture. Used		
	Frequency	Percent
Pds	10	50%
Vicryl	10	50%
Total	20	100%

Table-II. Frequency table of sutures used

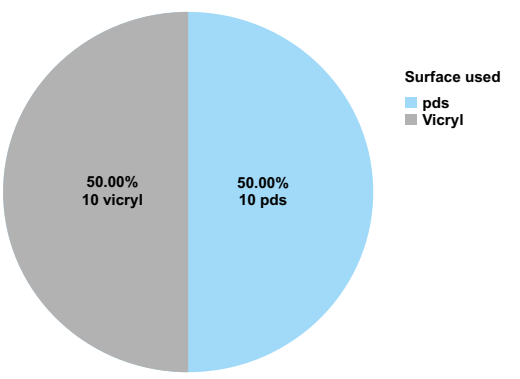

Figure-1. Pie chart of suture used

Post-op wound nature	Yes	No	Total	Chi-Square
Redness/Erythema	7 (35.0%)	13 (65.0%)	20(100%)	1.00
Swelling/edema	5(25%)	15(75%)	20(100%)	0.033
bleeding	14(70%)	6(30%)	20(100%)	0.141
fistula	0	20(100%)	20(100%)	0.00
Flap necrosis	17(85.0%)	3(15%)	20(100%)	0.211
infection	13(65.0%)	7(35.0%)	20(100%)	0.350

Table-III. Frequency and percentage of post-op wound nature

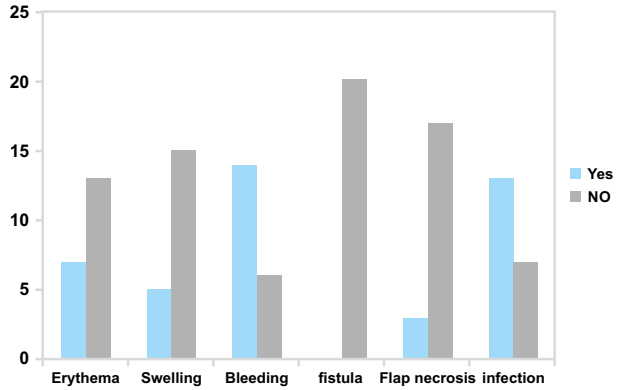

Figure-2. Multiple bar chart of post –op wound nature

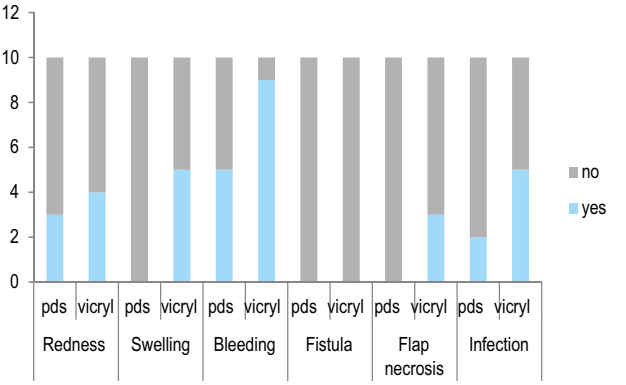

Figure-3. Clusterd bar chart of post-op wound nature

Post Op. Wound Nature		Pds	Vicryl	total
Redness/Erythema	yes	3(15.0%)	4(20.0)	7(35.0)
	no	7(35.0)	6(30.0)	13(65.0)
Swelling/edema	yes	0(.0%)	5(25%)	5(25%)
	no	10(50%)	5(25%)	15(75%)
Bleeding	yes	5(25%)	9(45%)	14(70%)
	no	5(25%)	1(5%)	6(30%)
Fistula	yes	0(0%)	0(%)	0(%)
	no	10(50%)	10(50%)	20(100%)
Flap Necrosis	yes	0(0%)	3(15%)	3(15%)
	no	10(50%)	7(25%)	17(85%)
Infection	yes	2(10%)	5(25%)	7(35%)
	no	8(40%)	5(25%)	13(65%)

Table-IV. Post-op wound nature:

DISCUSSION

The current study was conducted to find out rate of infection in uretheroplasty with vicryl and PDS and the data is collected from the surgical ward of Children Hospital & Institue of Child Health Lahore.

In the current study twenty (20) patients were selected undergoing uretheroplasty and it is concluded that two patients out of ten were infected in those patients pds was used and five patients out of ten were infected, in those patients vicryl was used.[5] The similar study was conducted by verlag (2013). He examined ninety seven (97) children in two and a half year period. He made two distnict groups. In one group PDS was used while in second group vicryl was used. It was a prospective study. Patients were followed up from 6 – 9 months. Uretherocutaneus Fistula rate was significantly higher in that group in which vicryl was used.[6],

Cimador et al., (2004) also conducted a study to compare the effect of suture material in

urethroplasty. it was a retrospective study. He made two groups concluded that stricture rate is higher in that group in which vicryl was used as compared to the other group.

In the current study it is concluded that PDS is better than Vicryl. Because vicryl is braided while PDS is monofilament. So bacteria can easily entrap in vicryl. Tensile strength of PDS is also better than vicryl.

CONCLUSION

In the study the most common reason of infection because of vicryl is that it is braided and bacteria can easily entrap and can cause infection. While PDS is monofilament. Monofilament suture goes through the tissues with less resistance then multifilament. Monofilament resist infection. Multifilament suture allow wicking (a method by which bacteria can enter the tissue). So PDS is better than Vicryl.

REFERENCES

1. Bourne, R.B., Andreae, P.R., Martin, L.M., Finlay, J.B., Marquis, F. **In vivo comparison of four absorbable sutures: Vicryl, Dexon Plus, Maxon and PDS.** jouranl of gynaecology.1998;31: 43 – 45.
2. Cimador,M.,·Castagnetti, M.,Milazzo, M., Sergio, M.,andGrazia, E. **Suture materials: Do they affects stricture rates in flap uretheroplasties.** Journal of Uorlogy. 2004;73: 320 – 324.
3. Dodson, J.L., Baird, A.D., Baker, L.A., Docimo, S.G. and Mathews, R.I. **Outcomes of delayed hypospadias repair: Implications for decision making.** Journal of Urology, 2007;81:178:278.
4. Emir, L., Germiyanoglu, C. and Erol, D. **A comparative analysis of primary versus re-operative cases.** Journal of Uroogyl, 2003; 9:61–216.
5. Georg, T.V. **The effect of suturing technique and material on complication rate following Hypospadias repair.** Journal of Urology, 2013;7: 156–158.
6. Hensle, T.W., Tennenbaum, S.Y., Reiley, E.A. and Pollard, J. **Hypospadias repair in adults: Adventures and misadventures.** Journal of urology, 2001;9:65 – 77.
7. Hsiao, W.C., Young, K.C., Wang, S.T., Lin, P.W. **Incisional hernia after laparotomy: prospective randomized comparison between early-absorbable and late-absorbable suture materials.** Journal of urology. 2000;24: 774 - -751.
8. Indion, J.U. **Comparison of wound infection caused by vicryl vs PDS in Uretheroplasty.** Journal Of urology, 2008;24: 241 – 248.
9. Powel, C.R., Mcaleer,I., Alagiri, M. and Kaplan, G.W. **Comparison of flaps versus grafts in proximal hypospadias surgery.** Journal of urology, 2000;12: 163–186.
10. Palminteri, E., and Berdondini, E. (n.d.). **Centre For Urethral And Genital Surgery.** Online available at: <http;// www.urethralsurgery.com.default.asp.> (Accessed 25 may 2014).
11. Rayan, K.L., Sedhaghati,T., Alexander, S.M. and Kang, N. **Effects of human urine on the tensile strength of sutures used for hypospadias surgery.** Journals of plastic, reconstructive & aesthetic surgery, 2013; 66: 835-838.
12. Snodgrass, W.T., Lorenzo, A. **Tubularized incised-plate urethroplasty for hypospadias reoperation, Journal of plastic & reconstructive surgery,** 2002;89:98–100.
13. Ulman., Erikci,V., Avanoglu, A., Gokdemir, A. **The effect of suturing technique and material on complication rate following hypospadias repair.** 1997; Journal of urology, 7 :156 – 157.
14. Yadav, V. A. **Wound closure – The Tradional Methods and Sutures. Singh, K.(Eds). Text book of Synopsis of medical instruments and procedures.** 1984; 4th ed.Vij, J.P, PP, 35.

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Fakhra Fakhr	Writing, Data collection, Analysis