COMPARATIVE STUDY OF EPISIOTOMY REPAIR: ABSORBABLE SYNTHETIC VERSUS CHROMIC CATGUT SUTURE MATERIAL

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CERTIFICATE

This is to certify that the dissertation entitled "C**OMPARATIVE STUDY OF EPISIOTOMY REPAIR: ABSORBABLE SYNTHETIC VERSUS CHROMIC CATGUT SUTURE MATERIAL"** is a bonafide work done by **Dr. DIVYA SELVARAJU** in the Institute of Social Obstetrics, Govt Kasturba Gandhi hospital (Madras Medical College) Triplicane , Chennai, in partial fulfillment of the university rules and regulations for award of MD degree in Obstetrics and Gynaecology under my guidance and supervision during the academic year 2010-2013.

DEAN

Prof. DR.V.KANAGASABAI M.D

Rajiv Gandhi Govt. general hospital

Madras Medial College

Chennai-3

DIRECTOR AND SUPERINTENDENT

Prof. DR.S.DILSHATH.M.D., DGO.

Institute of Social Obstetrics,

Govt. Kasturba Gandhi hospital

Madras Medical College,

Chennai–3

GUIDE

Prof. DR.P.M.GOPINATH, M.D., DGO.

Deputy Director

Institute of Social Obstetrics,

Madras medical college, Chennai-3

DECLARATION

I solemnly declare that this dissertation entitled **"COMPARATIVE STUDY OF EPISIOTOMY REPAIR: ABSORBABLE SYNTHETIC VERSUS CHROMIC CATGUT SUTURE MATERIAL"** was done by me at The Institute Of Social Obstetrics, Govt Kasturba Gandhi Hospital, Madras Medical College during 2010-2013 under the guidance and supervision of, **Prof. Dr. P.M. GOPINATH MD. DGO.** This dissertation is submitted to the TamilNadu Dr. M.G.R. Medical University towards the partial fulfillment of requirements for the award of M.D Degree in Obstetrics and Gynaecology (Branch-II).

Place: Chennai

Date:

Signature of Candidate

DR. DIVYA SELVARAJU

MD, Post Graduate Student

Institute Of Social Obstetrics,

Govt. Kasturba Gandhi Hospital

Chennai-3.

GUIDE

Prof. DR.P.M.GOPINATH.M.D., DGO.

Institute Of Social Obstetrics,

Govt.Kasturba Gandhi Hospital

Madras Medical College

Chennai-3.

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CONTENTS

Introduction

Perineal trauma is the most commonly encountered surgery in the day-to-day practice of an obstetrician. It can be either a spontaneous tear or a surgical (episiotomy) enlargement of the pelvic soft tissue outlet during the last phase of second stage of labor or delivery. The first surgical opening of the perineum in order to prevent severe perineal tear was suggested by Ould, in 1741. However, the first publication in a medical journal about episiotomy was only in 1810.

Prevalence of the episiotomy varies around the world depending on whether it is used as a routine or a restricted procedure. Rates vary from 8% in the Netherlands, 13% in England to 25% in USA. The rates are still higher in developing countries, like ours, since the use of restricted episiotomy is not being practiced widely in primigravidas. Although the Cochrane Database Review has now recommended the practice of restrictive episiotomy, routine use of it still continues in most of our maternity units. Prevalence rate of 54.9% and 99% have been reported in West African countries and East European countries respectively.[1]

Perineal trauma affects the physical, mental and social well-being of the mother in her peurperium. A large proportion of women suffer short term perineal pain and up to 20% have long term problems like dyspareunia.[2] Other

complications involve removal of retained suture material, wound dehiscence and re-suturing.[3]

Although the use of episiotomy remains a controversial topic in obstetrics, when it is done, it has to be repaired with an ideal suture material and the best suturing technique by a skilled operator. The search for an ideal suture material continues for decades. Ours, being a developing country with poor resources, chromic catgut is being used in most of our government institutions. Use of materials of natural origin is associated with a more pronounced tissue reaction than that caused by synthetic materials. Studies have shown synthetic suture materials like polyglactin to have less post-natal morbidity compared to catgut but with the risk of increased need for suture removal.[5, 6]This was addressed by irradiated polyglactin which gets absorbed rapidly than the standard polyglactin. The aim of our study is to compare the effect of two different suture materials-chromic catgut and rapidly absorbable polyglactin in the repair of episiotomy and its postpartum morbidity.

Review of Literature

Kurian Joseph et al (2008) studied the short term and long term effects of episiotomy repair with absorbable synthetic versus chromic catgut suture material. The study was conducted in a tertiary care railway hospital on 150 patients. It was a prospective, comparative study between polyglactin(Vicryl rapide) 2-0 versus polyglactin(Vicryl) 1-0 versus chromic catgut 1-0. Polyglactin(Vicryl rapide) group was found to be associated with less pain and lesser need for analgesic ($P<0.05$), than chromic catgut and standard polyglactin group . Removal of residual suture material was more common with standard polyglactin .

Masson F et al (1988) analyzed the use of fast- absorbing polyglactin (Vicryl rapide*)* in a group of 2000 patients using continuous technique on all planes. Vicryl rapide was found to have excellent tissue compatibility and all sutures were in place on the sixth day. There was no pain on day 6 for 99% of the patients.

Grants A et al (2001) did a one year follow up of patients after episiotomy repair in The Ipswich child birth study. Women repaired with polyglactin were less likely to have dyspareunia, compared with chromic catgut group (98% versus 13%; RR 0.59, 95% Confidence interval 0.39 to 0.91; P = 0.02) and less likely to

fail to resume pain- free intercourse (8% versus 14%; RR 0.57, 99% Confidence interval 0.3 to 0.38 to 0.87; to P<0.01).

Leroux N and Bujold E (2006) compared the impact of chromic catgut versus polyglactin versus fast-absorbing polyglactin, for perineal repair on short term pain and the resumption of sexual intercourse in 192 patients. Analgesic requirement was significantly decreased with fast-absorbing polyglactin than with standard polyglactin . Resumption of pain free sexual intercourse at 6 weeks was more frequent in the fast-absorbing polyglactin group (66%; P= 0.02). However, there was no difference between chromic catgut and standard polyglactin group (56%; P= 0.23).

Greenburg JA et al (2004) evaluated the healing characteristics of chromic catgut versus fast-absorbing polyglactin in 1361 subjects. There was significant reduction in pain (25% versus 34%; P= 0.006) in subjects of fast-absorbing polyglactin group at 48 hours. Again at 10 to 14 days there was significant reduction in analgesic use (5% versus 10%; P= 0.048) in the fast-absorbing polyglactin subjects.

Kettle C and Johanson R B (2000) compared eight trials that included absorbable synthetic with plain or chromic catgut suture for perineal repair. It was

concluded that absorbable synthetic suture material appears to decrease women's short term pain (odds ratio 0.62, 95% Confidence interval 0.54 to 0.71).

P K Shah et al (2001) proposed that Vicryl rapide sutures used for perineal repair results in less short term pain compared to chromic catgut.

RCOG guideline no. 23 (2004) states that use of a more rapidly absorbable form of polyglactin is associated with a significant reduction in pain and reduced need for suture removal in comparison with standard absorbable synthetic material. Cochrane systematic review of four randomized controlled trials involving 1681 women found that continuous technique of perineal closure was associated with less short term pain when compared with interrupted sutures.

Yaltirik U et al (2003) studied the histopathological changes incited by different suture materials including catgut and Vicryl in rats. Vicryl produced the mildest tissue reaction ($P<0.05$).

B R McElhinney et al (2000) compared Vicryl with Vicryl rapide. There was no difference between the two groups in pain perception in 24 hours and day 3. However at 6 weeks, the rate of dyspareunia was significantly more in the Vicryl group.

Studies of **Almeida (2008), Banninger (1998), Kettle C (2002), Mahomed (1989), Morano (2006), Stark (2009),** showed reduced use of analgesics up to ten days postpartum when continuous technique of suturing was practiced compared to the interrupted technique.

Overview

Episiotomy refers to a surgical incision of the female perineum performed at the time of delivery. It is usually done with scissors when the perineum is stretched and distended with a crowning fetal head. The purpose of episiotomy is to increase the diameter of pelvic soft tissue outlet and hence to prevent perineal lacerations, reduce the time of expulsion of the fetus thereby facilitating the delivery.

Episiotomy is one of the most commonly performed procedures on women.[7] Recent trends in obstetrics over time have influenced the decision to make an episiotomy, thus resulting in a decreased prevalence of the procedure.[8] A decision to perform episiotomy may be influenced by the type of obstetrical care giver. Private practitioners are four-fold more likely to use this procedure than midwifes.[9-11]Maternal position, use of epidural anesthesia and parity also appeared to influence the decision to give an episiotomy. Epidural anesthesia and primi parity increase the incidence of episiotomy, [9, 12, 13] while an upright or lateral maternal position is associated with fewer episiotomies than the lithotomy or supine position.[14]Operative vaginal deliveries are more likely to be associated with episiotomy than spontaneous delivery.[7]

Rationale for episiotomy

The primary purpose of an episiotomy is to prevent a large, spontaneous, irregular tear of the perineum. Controlled surgical incision has been argued to be easier to repair than a spontaneous laceration. Also the repair of the surgical incision will more likely be anatomically correct and hence less likely to have long term complications. There is increasing consensus that there is no role for episiotomy in preventing pelvic organ collapse.[15-19]

The purported benefits of episiotomy include the following: [20, 21]

- Increase the diameter of the pelvic soft tissue outlet
- Reduce third and fourth degree tear
- Easy repair and improved wound healing
- Reduce neonatal trauma in a macrosomic or a premature fetus
- Preserve the muscular and facial support of pelvic floor

The potential adverse effects of episiotomy have to be weighed against the potential benefits. The adverse effects include:

- Extension of the incision resulting in third or fourth degree tear
- Increased blood loss

- Unsatisfactory anatomical results (e.g. narrowing of introitus, asymmetry, skin tags).
- Increased rates of wound infection and dehiscence
- Increased postpartum pain
- Sexual dysfunction

The systematic review of studies of interventions that affects perineal trauma concluded that avoiding routine episiotomy significantly reduced perineal trauma (absolute risk difference-0.23, 95% Confidence interval 0.35 to -0.11).[22] This is important as the perineal trauma or laceration is a causative factor for dyspareunia[23]and post-partum pain.[24]However, some studies have shown that women giving birth with intact perineum or had a spontaneous laceration had less short term and long term postpartum pain than those who underwent episiotomy; [18,25] however other long term follow up studies have not found significant increase in the incidence of dyspareunia in those who underwent episiotomy.[19, 23]

Whether episiotomy results in weaker perineal muscle function than without episiotomy is also controversial.[18, 25, 26-29] Literature has shown that episiotomy incisions primarily cut through the urogenital diaphragm structures since the levator muscle is already pushed aside at the time of crowning. Much of the

strength of the perineal musculature can be regained with pelvic muscle exercise and over time.

Episiotomy as a routine procedure is not recommended in all spontaneous vaginal deliveries; however a restricted approach in the appropriate clinical settings is advocated.[20, 30]

A review of randomized trials comparing restricted to routine use of episiotomy found that restricted use resulted in less suturing (RR 0.74, 95% Confidence interval 0.71-0.77), posterior perineal trauma (RR 0.88, 95% Confidence interval 0.84-0.92) and fewer wound complications (RR 0.69, 95% Confidence interval 0.56-0.85). However the anterior perineal trauma was more. (RR 1.79, 95% Confidence interval 1.55-2.07).[20]

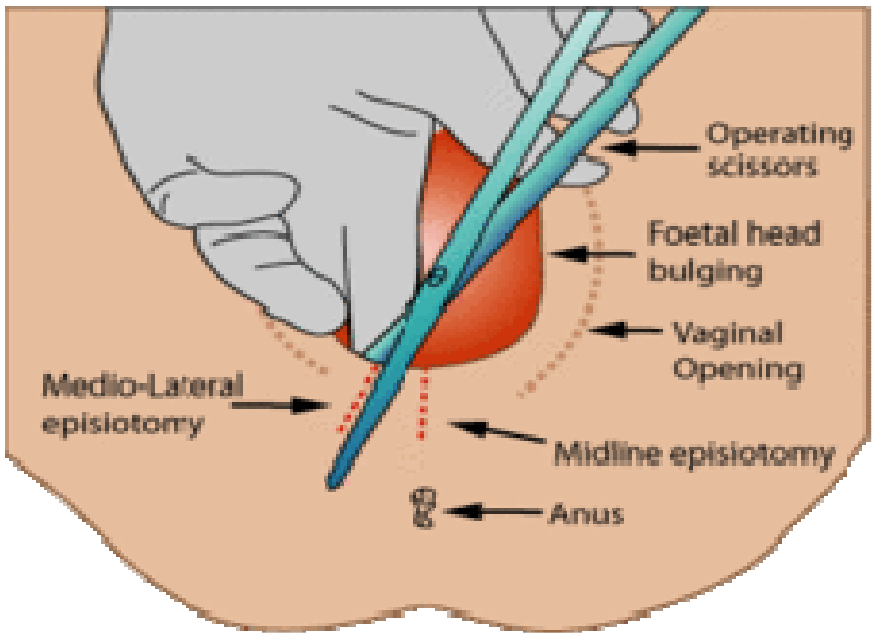
Another systematic review showed no evidence for a routine episiotomy resulting in less pain, severity of laceration or pelvic organ prolapse compared to restricted use.[30] In addition, a decision-tree model showed that routine episiotomy was costlier than the restricted use.[31]

Based on these studies, the American College of Obstetricians and Gynecologists support the use of restricted episiotomy in place of its routine use.[21]

TYPES OF EPISIOTOMY

There are three major types of episiotomy: medio lateral, median and J incision.

Fig 1- Types of episiotomy



MEDIAN

The midline or median episiotomy is a vertical incision from the fourchette that extends caudally in the mid line. Advantages are that it is easier to repair, yields a better cosmetic result [32] and is also associated with less post partum pain. Since the apex points directly towards the maternal anus, if there is an extension, there is high risk of anal sphincter injury. The incidence of third and fourth degree perineal laceration is more with median than mediolateral or no episiotomy.[18, 33-39]

MEDIOLATERAL

The mediolateral episiotomy is more common in our country. Incision extends from the fourchette at an angle of 45 degrees .The anatomical structures cut are perineal skin, bulbocavernosus muscle, and transverse perineal and vaginal epithelium. The major advantage is that the incision is directed away from the anal sphincter and hence there is partial protection for the sphincter and the rectum from an extended injury. Retrospective studies have shown mediolateral episiotomy to have two-to-four fold reduction in sphincter injuries compared to no episiotomy.[33, 40, 41]

The mediolateral episiotomy is associated with more blood loss as a greater volume of muscle with rich vascular supply is incised.[42, 43]The repair is also technically more challenging. Some reports suggest that mediolateral episiotomy was associated with dyspareunia and more postpartum pain than a median or no episiotomy, [25] but this has not been proved in randomized trials.[32]

Controlled studies have shown that use of mediolateral episiotomy results in reduced incidence of third and fourth degree lacerations compared to median episiotomy. The Royal College of Obstetricians and Gynecologists recommend mediolateral over median episiotomy in selective cases. [44] The American College

of Obstetricians and Gynecologists prefer mediolateral to median episiotomy, when episiotomy is clinically indicated. [21]

J INCISION

This technique though favored by some practitioner, is not widely used. The purpose of 'J' incision is to combine the advantages of the mediolateral and median techniques and at the same time avoid their disadvantages. Incision starts at the fourchette, extended caudally along the mid line and then curved laterally in the form of letter "J". The anatomical structures caught in between the incision include the perineal skin, the junction of the perineal body with the bulbocavernosus muscle, perineal body and the vaginal epithelium. Ideally, the transverse perineal muscle is spared as the lateral part of the incision is below this muscle.

The combination of the mediolateral and median episiotomy may maximize the advantages and reduce the disadvantages of the composite techniques. The apex of the incision points away from the rectum so that any further extension is guided away from this structure. The ease of the repair lies between the mediolateral and median procedures while the postpartum pain and dyspareunia are similar to that with mediolateral technique.

REPAIR OF EPISIOTOMY

The choice of suture material for repair of episiotomy or perineal laceration is largely of one's personal preference. Chromic catgut was widely used in most institutions. It now appears that chromic catgut is associated with more postpartum discomfort [45-47] and hence chromic catgut has been largely replaced by synthetic absorbable materials like polyglactin and polyglycolic acid. A systematic review of randomized trials shows that standard absorbable synthetic suture when compared with catgut for episiotomy or perineal laceration repair following childbirth is associated with less postpartum pain in the first three days (OR 0.83, 95% Confidence interval 0.76-0.90), less analgesic requirement in the first ten postpartum days (OR 0.71, 95%Confidence interval 0.59-0.87) and less wound dehiscence and hence re-suturing (OR 0.25, 95% Confidence interval 0.08-0.74), with no difference in dyspareunia or long term pain.[47] However, the need for suture removal of unabsorbed synthetic material is twice higher; this problem diminished by using rapidly-absorbable synthetic sutures.[47]

One should use the smallest diameter suture with adequate tensile strength for an ideal episiotomy repair; 2/0 and 3/0 are suitable for soft tissue repair. Monofilament sutures cause less tissue reaction compared to braided sutures and thus may minimize infection risk and discomfort. However this must be balanced against the significantly quicker loss of tensile strength and longer absorption. 2/0

and 3/0 is an appropriate choice for most perineal lacerations repair. Several case studies and one small randomized trial in Europe have shown that skin adhesives could be replaced for sutures in the repair of perineal lacerations.[48-51]

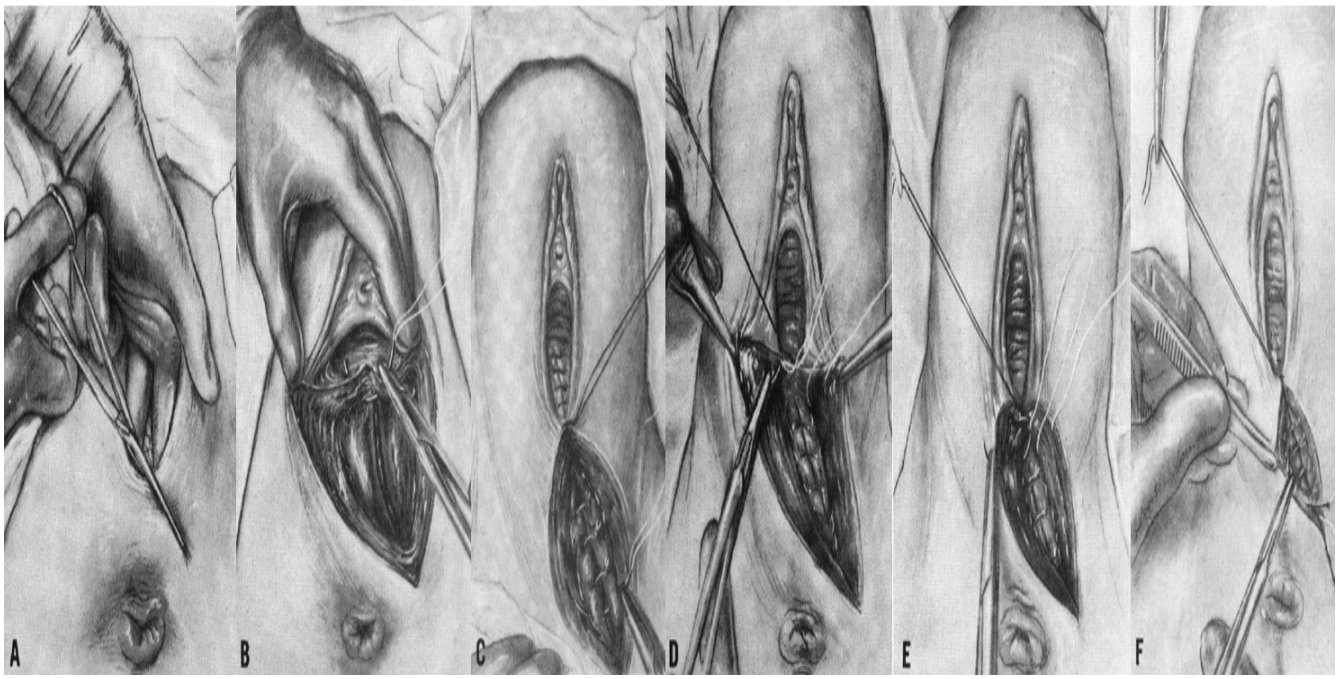
TECHNIQUES OF PERINEAL REPAIR

There are wide variations in both materials and techniques used for perineal repair between maternity units and individual practitioners. The rationale for choosing the technique appears to evolve from the way how the operator was first taught rather than any strong clinical evidence. It could be hypothesized that even when the best suture material and the most appropriate technique is used to repair a perineal trauma, short and long term outcome depends on the skill of the operator.

Interrupted technique

Traditionally, perineal trauma is repaired in three stages: A continuous locking stitch commencing from the apex of the wound and finishing at the level of the fourchette with a loop knot is used to close the vaginal mucosa. Three or four interrupted sutures are used to re-approximate the perineal muscles. The last part of the procedure is to close the perineal skin either by the continuous subcutaneous or interrupted transcutaneous stitches.

Fig 2- Interrupted technique of episiotomy repair



Another variation of the interrupted technique involves the placement of inverted interrupted stitches to close the muscle layer. The skin is then approximated with inverted interrupted stitches placed in the subcutaneous plane, a few millimeters under the perineal skin edges. The rationale for this technique is that the knots are buried in the depth of the muscle and the interrupted skin sutures knots are also hidden to facilitate healing.

Fig 3-Interrupted locking suture for vaginal mucosa

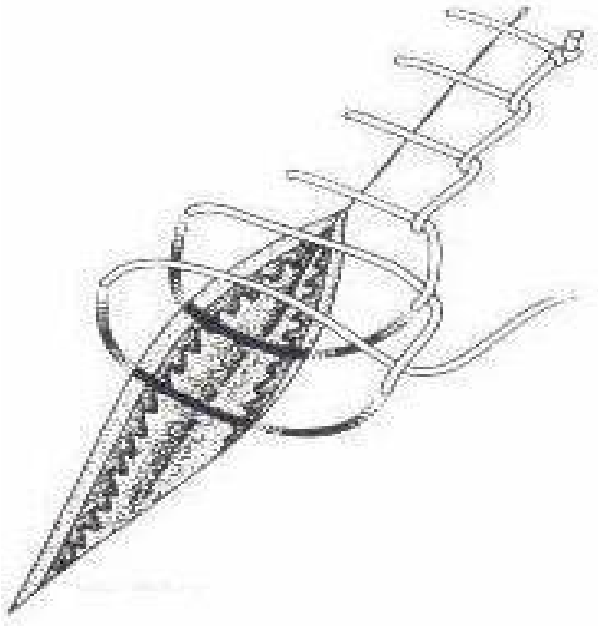


Fig 4-Simple interrupted suture for muscle layer

In two –stage technique

Here vaginal mucosa is closed with the continuous locking stitch. This is followed by re-approximation of the perineal muscle with three or four interrupted stitches; the skin is not sutured but left apposed with no more than half a centimeter. The rationale behind this technique is that avoidance of transcutaneous stitch may contribute to reduction in the morbidity experienced by women following perineal repair. Women often complain of pain and tightness when transcutaneous skin suture is used; moreover when standard synthetic material is used for perineal repair, there is an increased risk of the stitches to be removed after three months postpartum.[47]

Continuous non-locking technique

This is again a three stage technique where repair begins from above the apex of the vaginal wound and the deep tissues and mucosa closed with a single continuous non-locking stitch, unlike the locking stitch used in the traditional method. Continuous non-locking technique is used to close the perineal muscles while the skin is closed with continuous suture in the subcutaneous fascia. The repair is finished with a secured knot placed in the vagina, behind the hymnal remnants. The whole length of absorbable suture material is used for the entire repair with no knots, other than the anchoring and terminal knots. The rationale

behind the technique is that lot of interrupted stitches can be easily over tightened, which restrict the distribution of tissue edema causing increased pain. The tension is transferred along the whole length of the single suture with the continuous technique; also the skin sutures are inserted below the surface in the subcutaneous plane, thus avoiding the nerve endings, to reduce pain.

Fig5-Continuous non-locking suture for vaginal mucosa and muscle layer

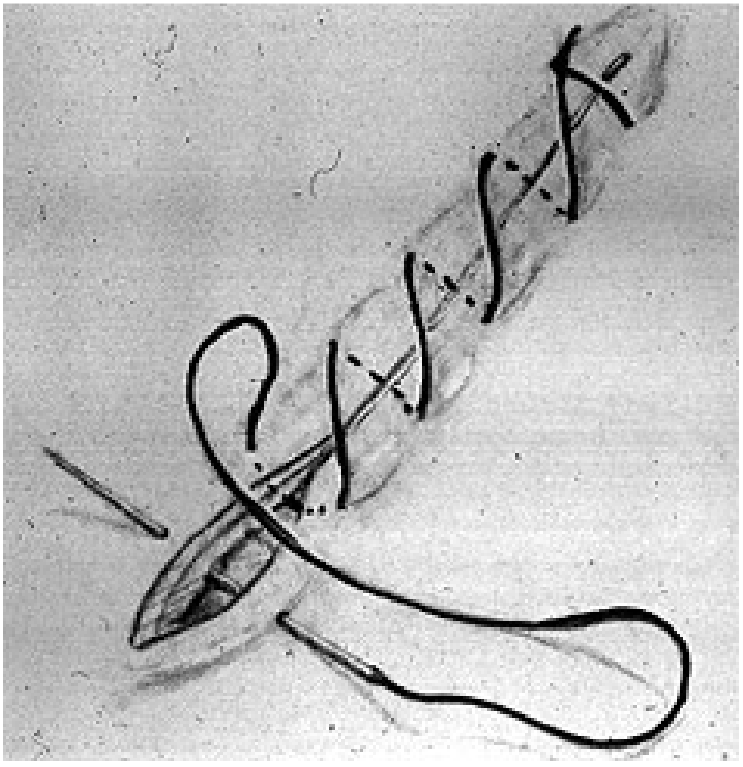
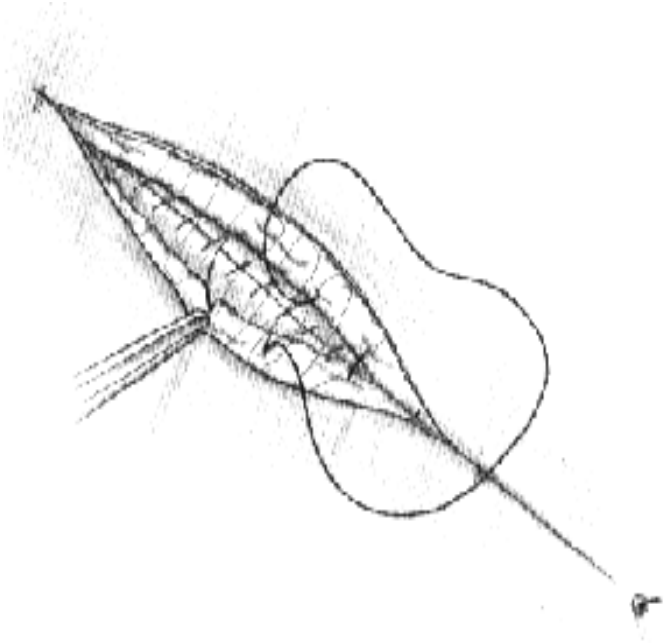


Fig6- Sub-cuticular suture for skin layer



COMPLICATIONS

The most common complications of episiotomy are extension of the incision, bleeding, wound dehiscence and infection.

Bleeding can usually be controlled with sutures or pressure, although a hematoma may develop occasionally. Signs of infection include fever, purulent discharge and wound tenderness, typically occurring 6-8 days postpartum. Most infections resolve with local wound care, however, opening the incision to drain an abscess may sometimes be necessary. If the defect is small, it can be allowed to heal spontaneously; large defects are corrected surgically. Necrotizing fasciitis or a fistula may occur in rare cases.

All of these problems can occur from either childbirth alone or in the absence of episiotomy, so it is difficult to determine if there is any excess risk caused by this procedure without appropriately controlled trials. Large randomized trials of restricted versus routine use of episiotomy demonstrated that the former resulted in fewer wound complications and less perineal pain.[52] However, restricted use of episiotomy was associated with higher rates of anterior perineal trauma.[20,52,53]

Extension

One of the most common complications of episiotomy is its extension to create a third or fourth degree laceration or deep vaginal tear. The prevalence of third or fourth degree laceration among primiparous women delivering vaginally, by type of episiotomy has been reported to be; no episiotomy (1%), medial episiotomy (20%) and mediolateral episiotomy (9%).[54]

The risk factors for extension leading to severe laceration include previous third or fourth degree laceration, inadequate length of incision, late timing, macrosomia, midline episiotomy, Asian ethnicity, instrumental vaginal delivery, nulliparity and occipito-posterior position.[54-58] Using a classification and regression tree to analyze data from over 25000 term vaginal deliveries, the estimated risk of third or fourth degree laceration was almost 70% in the setting of instrumental

delivery performed with an episiotomy for an infant with birth weight more than 3600 grams.[59]

Dehiscence

It is reported to occur in 0.1-2% of the procedures, data regarding a preceding third or fourth degree laceration is minimal.[60] Though routinely closure of these defects was delayed for two or more months after delivery, early repair before two weeks of delivery has become common and seems successful.[61] One group recommends the administration of intravenous antibiotics, debridement of all necrotic tissue and sutures and daily irrigation, before the surgical repair.[60] Mechanical bowel preparation with an oral solution is done the night before surgery. The wound is closed in a similar manner like that of a primary repair when it is free of exudates and is granulating.

SUTURE MATERIALS

Suture materials have been related to surgery throughout its history. They are of paramount importance even after the introduction of other methods of wound closure such as strips and clips. Hardly any surgical procedure can be performed without the use of suture material, is no exaggeration.

History of suture materials

The art of closing wounds with needle and thread is several thousand years old. Surgical sutures have their history traced back to ancient Egypt, and the literature contains a number of descriptions of surgical techniques and the sutures involved in it. Many different materials for sutures and ligatures had been followed before catgut became the standard surgical suture material, at the end of 19th century. Gold, silver and steel wire, animal and human hair, linen, silk, gut strings from sheep and goats were some of the materials used previously. Metal threads were tested as suture material at the beginning of the 19th century. Inertness of the material with body tissue was taken as an advantage. Still, metals had its own disadvantages: Tying the knot was difficult and easily breakable due to their stiffness, also suppuration of the wound edges were a frequent event. This led to establishment of silk as the leading suture material. Following the publication of Lister's research on the prevention of wound suppuration in 1867, fundamental change in the assessment of suture materials occurred. Based on the work of Coch and Pasteur, Lister concluded that disinfecting sutures, instruments and dressings with carbolic acid would prevent wound suppuration. Initially he used silk on the assumption that it was absorbable. Later he used catgut as it was a more rapidly absorbable material. Catgut is produced from the connective tissue of the animals, especially bovine subserosa.

At the beginning the 21st century alternative products had been developed. These are the synthetic absorbable suture material that superseded catgut, in Europe. Nevertheless, catgut continued to have a major role in wound care worldwide. Most of the sutures are nowadays sterilized by gamma irradiation or ethylene oxide.

The choice of an appropriate suture material for any wound closure largely contributes to the final functional and cosmetic outcome.

Characteristics of suture material

The choice of suture is made by balance of the various characteristics of suture materials that is most appropriate for the specific wound closure situation.

Absorbable vs. non-absorbable:

- Suture that undergoes degradation and absorption in tissues is an absorbable suture.
- Absorbable sutures are generally used as deep sutures; they need not be removed post- operatively.[62]
- A non- absorbable suture maintains its tensile strength and is resistant to absorption.

- Non- absorbable sutures are used for surface sutures; they require post operative removal. They can be used in deeper structures that require prolonged support.[62]

Coefficient of friction:

Coefficient of friction pertains to how easily a suture passes through tissues.[63]

Tensile strength

It is a measured force that the suture will withstand before it breaks.[64,65]The suture material should maintain adequate tensile strength for its specified purpose.[64] It is preferred to use the smallest size that will provide adequate strength. The strength increases as the first digit decreases.

3-0 is a thick strong suture while 6-0 is a comparatively thin weak suture.

Plasticity and Elasticity:

Plasticity is the ability to retain length and strength after stretch. It refers to the ability of the suture to stretch with wound edema but without returning to its original form when the swelling subsides. Thus sutures with high plasticity may become loose when swelling decreases and thereby fail to oppose wound edges correctly.

Elasticity is the ability to regain its original length after stretch. [63] Hence suture with high elasticity will return to its original length or form when the swelling subsides. This has obvious clinical advantages as the suture material that is highly elastic is less likely to cut through the skin with swelling and effective approximation of the wound edges throughout the healing process.

Knot security:

It is the quality of the suture that allows it to be securely tied with a minimum number of throws.[64] The knot strength is calculated by determining the force necessary in the causation of a knot to slip.[63,66] Greater knot strength has a minimum risk for wound dehiscence. Suture with high coefficient of friction tends to upgrade and drag through tissue but has got good knot security.[67]

Memory:

It is the capacity of a suture to remain free of curling and assume a stable linear configuration when removed from packaging and after stretching. Sutures with significant memory are difficult to work with as they are not pliable and necessitate additional knot.

Handling:

The factors that have got an impact on suture handling include plasticity, elasticity and memory.[65] Silk is exceptional for its handling characteristics and easy workability; setting the standard for comparing other material.[65, 62]

Tissue reactivity:

All suture materials may elicit a tissue reaction, as they are foreign to human tissue, 65 such as an inflammatory response that may increase the infection risk thereby interfering with wound healing. The severity and the duration of the tissue response depend on the quantity and type of suture material used along with its configuration.[68,69] An ideal suture material should be non capillary, non allergenic, non electrolytic, non carcinogenic and with minimal tissue reaction that doesn't favor bacterial growth.

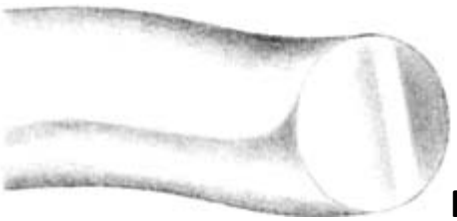
Origin

Suture materials maybe either synthetic (e.g. polypropylene) or natural (e.g. gut and silk); the latter cause more intense inflammatory reaction than the former.

Physical configuration

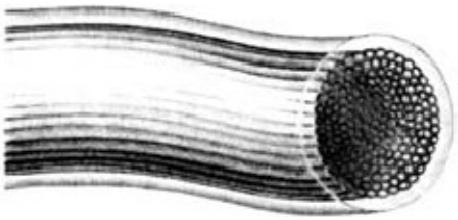
Suture material may be composed of either a single or multiple filaments.

Monofilament; there are several desirable qualities that includes low tissue drag, good strength and low propensity to harbor infection. The risk of wound infection is reduced with monofilament when compared with braided sutures; [63, 70] however monofilament sutures cannot be easily handled as braided sutures.

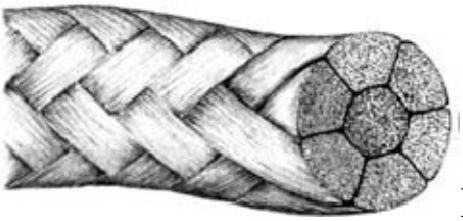


Monofilament

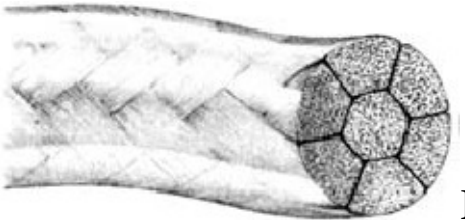
Multifilament; a braided configuration is easy to handle but promote tissue infection and reactivity.[64] Braided suture can harbor bacteria within its crevices and thereby escapes phagocytosis.[63, 71]



Multifilament with coating



Multifilament braided



Multifilament braided and coated

Capillarity

Capillarity is an inherent physical property of braided sutures due to the available interstitial space and hence the ease of transporting liquids along its strand. It is related to the ability of the suture material to spread and transport microorganisms and hence important in terms of wound infection. Monofilaments do not show capillarity. Braided silk with wax and chromic catgut do not exhibit capillarity.[72]

Fluid absorption

Fluid absorption is presumed to be of significance as it is has an impact in contaminating bacteria on tissues. The chemical nature than the physical structure seems to influence the level of fluid absorption. Synthetic sutures are more hydrophobic and hence with lower fluid absorption capacity compared to natural sutures. Plain and chromic gut sutures have the highest fluid absorption .[72] Multifilament sutures have higher fluid absorption than the monofilament sutures.

Ease of removal

Rapidly absorbable sutures are indicated for wounds which require support only for a short period and where the suture removal may be difficult or painful.

SUTURES

Absorbable

Polyglactic 910(Vicryl)

Introduced in 1974, Polyglactin was the second synthetic absorbable suture material available. It is a synthetic, absorbable, braided suture made of polyglactin 910 coated with a copolymer of L- lactide and glycolide (polyglactin 370) and calcium stearate. Polyglactin 910 retains 65% of its strength at two weeks and 40% at three weeks. It stays as a completely buried suture to approximate wound edges until the wound has gained enough strength to prevent the edges from separating [62] and hence it is extremely useful. Complete absorption of Vicryl occurs between 60 and 90 days. Since the polyglactic acid is absorbed by hydrolysis there is less often an inflammatory response when compared with proteolytic absorption of surgical gut .[64] It is available in undyed or violet-dyed form. Vicryl is extruded if used in the subcuticular layer.

Polyglactic 910 (Vicryl rapide)

It is a synthetic, rapidly absorbable, braided suture. It is derived from polyglactin 910 that is partially hydrolyzed in a buffer solution and sterilized with gamma irradiation. This processing speeds absorption, without altering the mechanical properties of the suture.[73] 50% of the tensile strength is retained at 5 days, while it is totally lost in two weeks. Absorption of *Vicryl rapide* sutures occurs by hydrolysis in 7 to 15 days and it falls off in 10 to 14 days.

Antibacterial suture (coated vicryl plus)

It is an absorbable suture coated with an antimicrobial material using triclosan. Less post operative pain was noted by pediatric surgeons in patients treated with this antibacterial suture. Inhibition of bacterial colonization and hence the avoidance of subclinical infection was attributed to the reduction in pain.[74]

Poliglecaprone (Monocryl)

It is a synthetic, absorbable monofilament suture made of a copolymer of e-capralactone and glycolide. When compared with vicryl rapide, poliglecaprone subcuticular closure results in significantly smaller and less reactive scars, [75] thus lowering the tendency to hypertrophic scar formation.[75] Undyed Monocryl retains 25% of the tensile strength at two weeks and 0% at 21 days whereas dyed

Monocryl retains 30-40% of its tensile strength at two weeks. Absorption occurs by hydrolysis in 90 to 120 days.

Polyglycolic suture (Dexon II)

It is a synthetic, absorbable, braided, coated suture made of polyglycolic acid, polycaprolat. Coefficient of friction is decreased by the lubricant coating. 89% of the tensile strength is retained at 7 days, 63% at 14 days and 17% at 21 days.[76] In a comparative study with Vicryl, Dexon II showed the greatest irreversible elongation,[77] while Vicryl showed the slowest loss of function with highest knot breaking strength.

Polydioxanone (PDS)

It is a synthetic, absorbable monofilament suture made from polyester. It retains 75% of tensile strength after two weeks, 50% after four weeks and 25% after six weeks. It is a low reactivity suture that maintains integrity in the presence of infection.[62] It is absorbed by hydrolysis in 180 to 210 days.

Polyglycolide-trimethylene carbonate (Maxon)

It is a synthetic absorbable monofilament suture which is a copolymer of glycolide and trimethylene carbonate. Tensile strength was 40 to 92 days for Maxon and 64 to 80 days for PDS. Absorption is complete in 6 to 7 months.[63]

Plain, chromic and fast absorbing plain gut

First absorbable suture material to be available was surgical gut. They are biologic, absorbable monofilament sutures. They are made by twisting together strands of purified collagen prepared from the submucosal layers of the small intestine of sheep or serosal layer of cattle's small intestine. Plain gut is untreated that retains strength for seven days and gets absorbed in 10-14 days. The chromic gut is tanned with chromic salts in order to increase the holding time to 14 days and absorption in 21 days. Fast- absorbing plain gut is heat treated to increase the absorption rate. These sutures have less tensile strength than plain gut of the same size. It is used for wounds in children or in locations from where suture removal is difficult.[64] Chromic gut is absorbed by proteolysis and macrophages while plain gut attracts lymphocytes to facilitate its absorption.[7]

Table 1. Characteristics of Absorbable Sutures

Property	Gut	Polyglactin	Polyglycolic acid	Polydioxanone	Polytrimethylene Carbonate	Poliglecaprone
Tensile strength	Low Proteolysis by 60-90 d	High Hydrolysis by 60-90 d	High Hydrolysis by 90-120 d	Moderate Hydrolysis by 180-210 d	High Hydrolysis by 180-210 d	High Hydrolysis by 90-120 d
Knot security	Poor	Fair	Fair-good	Poor	Good	Good
Coefficient of friction	High	Medium	High	Low	Low	Low
Tissue reactivity	High	Low-moderate	Low-moderate	Low	Low	Low
Memory	Low	Low	Low	High	Low	Low
Handling	Fair	Good	Fair-good	Poor	Good	Excellent

Non-absorbable

Silk

It is a natural, non-absorbable, multifilament suture that is extruded by silkworm larvae and made of protein filaments. Surgical silk is dyed for greater visibility and braided for easy handling. It has got good knot security with a significant inflammatory response. Silk is prone for infection owing to its braided

configuration and can be infiltrated by tissue ingrowths. It suffers progressive degradation resulting in gradual loss of tensile strength.

Polypropylene (Prolene)

It is a synthetic non-absorbable monofilament suture made by catalytic polymerization of propylene, having high tensile strength and low tissue reactivity. Polypropylene has a extremely smooth surface thus decreasing the knot security which must be compensated with extra throws. Its high plasticity and ability to accommodate wound edema is a significant advantage of prolene. Polypropylene is an ideal suture for running, subcuticular stitch as it is easy to remove.[62]

Nylon (Ethilon)

It is a synthetic non-absorbable monofilament suture made of chemically inert polyamide polymer fiber with low tissue reactivity. They are most commonly used in cutaneous operations.[62] Its tensile strength is high at two weeks with 50% loss by 1-2 years due to progressive hydrolysis.

Braided polyester (Mersilene)

It is a synthetic non-absorbable uncoated monofilament or braided suture material with low tissue reactivity. The tensile strength is high at two weeks with a high coefficient. The braided form gives a core secure knot unlike the

monofilament form. However the braided form cannot be used in presence of infection.[62]

ePTFE (Gore-Tex CV4)

It is a synthetic non-absorbable monofilament suture made of polytetrafluroethylene to produce porous microstructure that is 50% air by volume. The suture produces minimal tissue response with cellular ingrowths. The tensile strength does not change in vivo. It affords excellent handling and does not degrade the presence of infection.

Table 2-Charateristics of Non-absorbable suture

Properties	**Silk**	**Polypropylene**	**Nylon, Monofilament**	**Nylon, multifilament**	**Polyester**	**Polybutester**
Tensile strength	Low	Moderate	High	High	High	High
Knot security	Excellent	Poor	Poor	Fair-good	Good	Fair-good
Tissue reactivity	High	Low	Low	Moderate	Low-moderate	Low
Coefficient of friction	High	Very low	Low	High	High	Very low
Memory	Low	High	High	Medium	Medium	Low
Handling	Excellent	Poor	Poor	Fair-good	Good	Good

AIM OF THIS STUDY

To compare absorbable synthetic sutures with chromic catgut sutures for episiotomy repair with respect to pain, analgesic requirement, wound dehiscense, removal of residual suture material, long term pain & superficial dyspareunia.

PRIMARY OBJECTIVE

Whether the synthetic absorbable suture material is better than the natural absorbable suture material in relieving the postpartum morbidity associated with episiotomy or perineal laceration repair.

PRIMARY OUTCOME

- Early short term pain (up to 48 hrs)
- Late short term pain (up to 7 days)
- Use of Analgesia

SECONDARY OUTCOME

- Long term pain
- Nature of wound healing
- Need for re-suturing
- Removal of unabsorbed suture material

INCLUSION CRITERIA

- All patients with an elective episiotomy
- Second degree perineal laceration

EXCLUSION CRITERIA

- Episiotomy incisions extended by instrumental deliveries
- Severe anemia
- Diabetes mellitus
- On drugs like steroids & immunosuppressant
- Epidural labor analgesia
- Women whose membranes had ruptured for >24hrs
- Patients with foul smelling vaginal discharge

PLACE **: Institute of Social Obstetrics,**

Govt. Kasturba Gandhi Hospital

Chennai-600005

STUDY DESIGN : Prospective study

STUDY PERIOD : FEBRUARY 2012 TO JULY 2012

ETHICAL CLEARENCE: Obtained

CONSENT : Informed consent from all patients

Materials and methods

The study was conducted in Institute of Social Obstetrics and Govt. Kasturba Gandhi Hospital, Triplicane, Chennai-5.

This is a prospective, comparative study involving two groups of patients selected randomly as per the inclusion criteria. Each group will have 100 women.

A) Polyglactin 910(Fast-absorbing) – group I

B) Chromic catgut – group II

All women in the reproductive age group, attending the Government Kasturba Gandhi Hospital, who had a normal vaginal delivery, requiring an episiotomy or had a second degree perineal tear, were eligible to enter the trail. Enrolment took place immediately after delivery, after taking their consent.

All episiotomies were repaired using the same technique: single continuous sub-cuticular perineal sutures, by the post-graduates. Mothers were interviewed at 48hrs, 7days, 15days, 6 and 12 wks regarding perineal pain perception, analgesic requirement and dysparuenia. Local examination was done for nature of healing.

All women were routinely put on analgesic T.Diclofenac sodium 50mg 6hrly and antibiotic C.Amoxicillin 500mg 6hrly for 5days.

From 1st February to 31st July 2012, 200 women were recruited into the trail and all of them completed follow up at six and twelve weeks. In the Chromic catgut group, 81 patients were primigravid and 19 patients were multigravid; in the Polyglactin group, 84 patients were primigravid and 16 patients were multigravid. All patients were interviewed and examined at 48hrs and 7 days. Perineal pain was assessed by patients registering their pain perception on a visual analogue scale. At six weeks, patients were reviewed for any wound dehiscence, infection and residual suture material. At twelve weeks, patients were called over the phone and enquired regarding the resumption of sexual activity and the difficulties encountered with it. 33 patients of the Polyglactin group and 28 patients of the chromic catgut group had not resumed their sexual life post partum.

Results and analysis

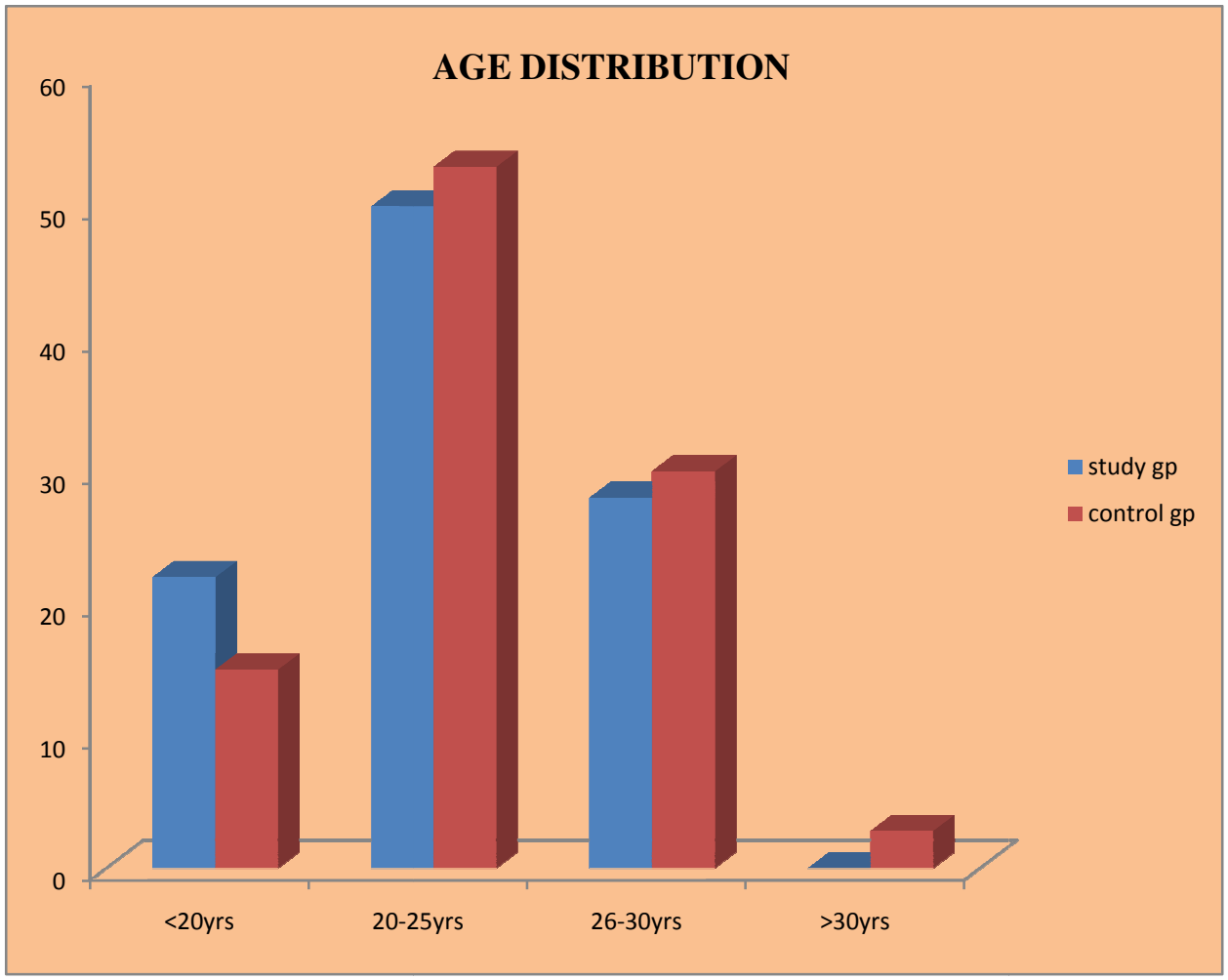
This study commenced with 100 women in each group who underwent episiotomy or perineal laceration repair. None of the patients in our study had epidural analgesia for pain relief in labor. In our study, all the perineal repairs were performed under local anesthesia by the post graduates in the labor ward.

Descriptive statistics were utilized and all results are presented in terms of percentages. Categorical data were compared using Chi Square Test or Fischer's Exact Test if appropriate. Statistical significance was $p<0.05$.

AGE DISTRIBUTION

Age	Number of patients	Study group	Control group
Less than 20 years	37	22(59.5%)	15(40.5%)
20-25 years	103	50(48.5%)	53(51.5%)
26-30 years	58	28(48.3%)	30(51.7%)
More than 30 years	2	0	2

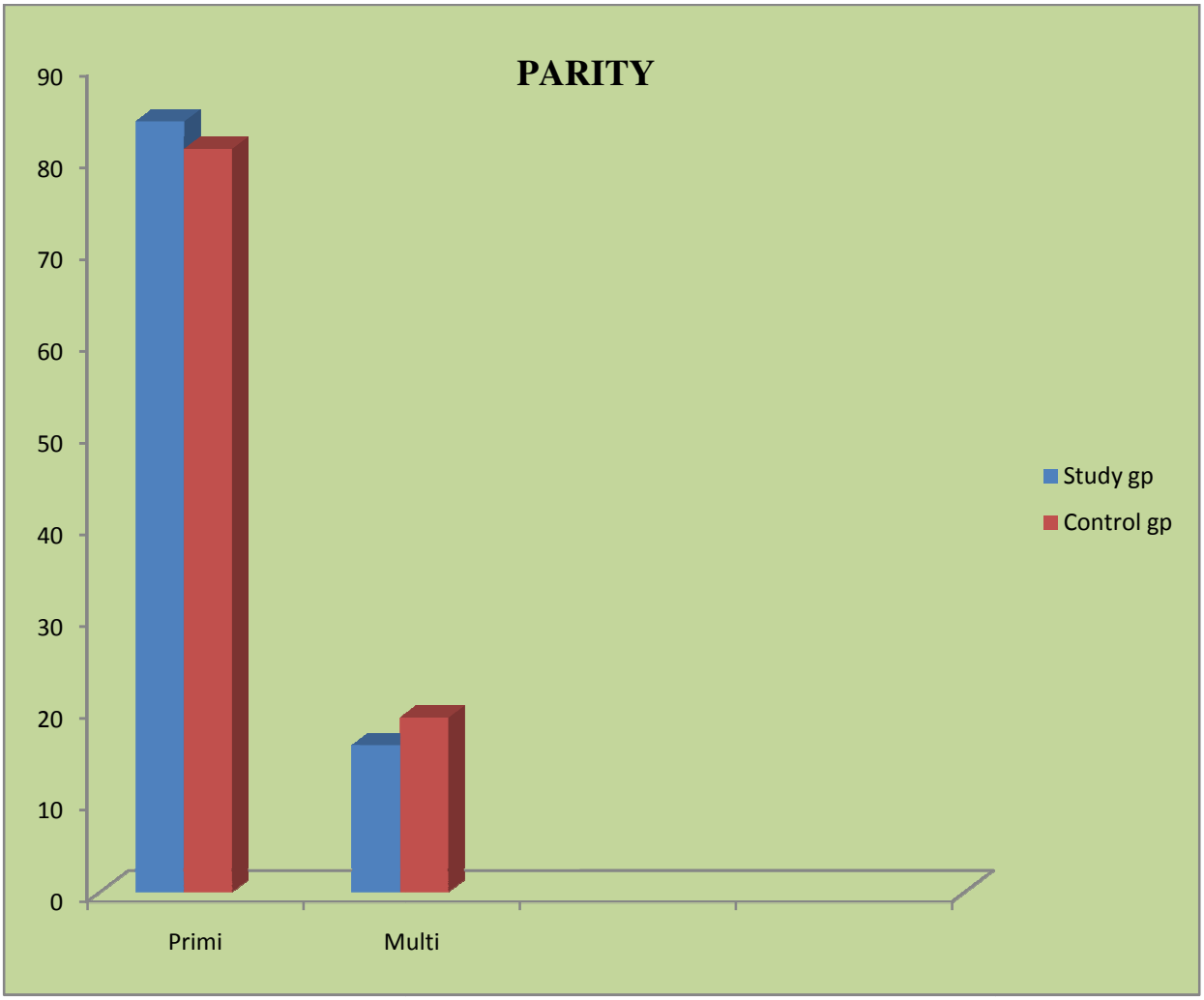
The mean age of the patients was 22.71 years in the study group and 23.66 years in the control group. The distribution of women in the age group 21-25 years was relatively higher in both the groups (48.5% in the study group and 51.5% in the control group). The frequency of the use of suture materials did not differ significantly with regard to the age group (p=0.023).


AGE DISTRIBUTION
60
50
40
30
20
10
0
<20yrs
20-25yrs
26-30yrs
>30yrs
study gp
control gp

PARITY

Parity	Number of patients	Study group	Control group
Primi	165	84	81
Multi	35	16	19

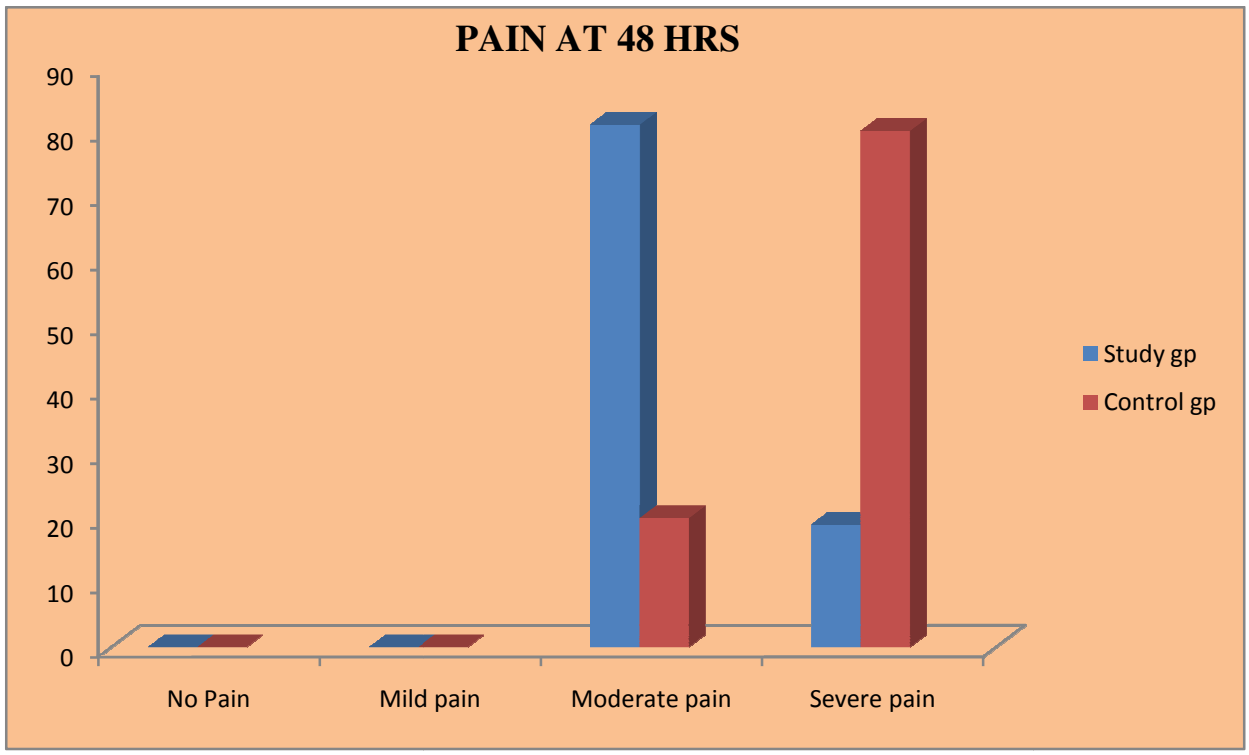
In the study group 84% of women were primi and 16% were multigravida. In the control group 81% were primi and 19% were multigravida. This data shows more of primi gravida in both the groups when compared to multigravida.

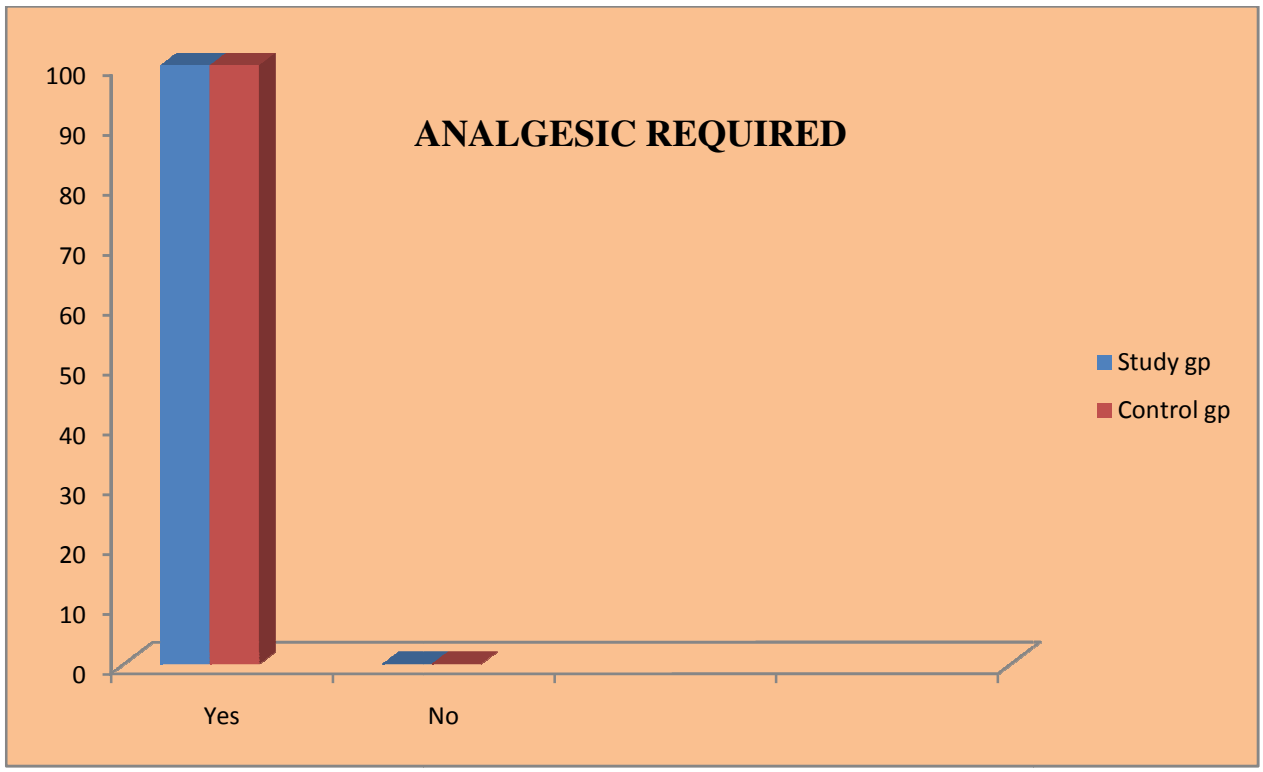

PARITY
90
80
70
60
50
40
30
20
10
0
Primi
Multi
Study gp
Control gp

PAIN AT 48 HOURS

Pain at 48 hours	Study group	Control group	P value
No pain	0	0	
Mild pain	0	0	
Moderate pain	81 (80.2%)	20 (19.8%)	0.000
Severe pain	19 (19.2%)	80 (80.8%)	0.000
Analgesic required	100	100	

80.2% of the patients of the study group had moderate pain when compared to 19.8% in the study group. 80.8% of patients with severe pain were in the control group whereas only 19.2% of the study group had severe pain. There is a statistical significance ($p<0.05$) in the degree of pain perception; more in the control group. Analgesic was given to both the group of patients.

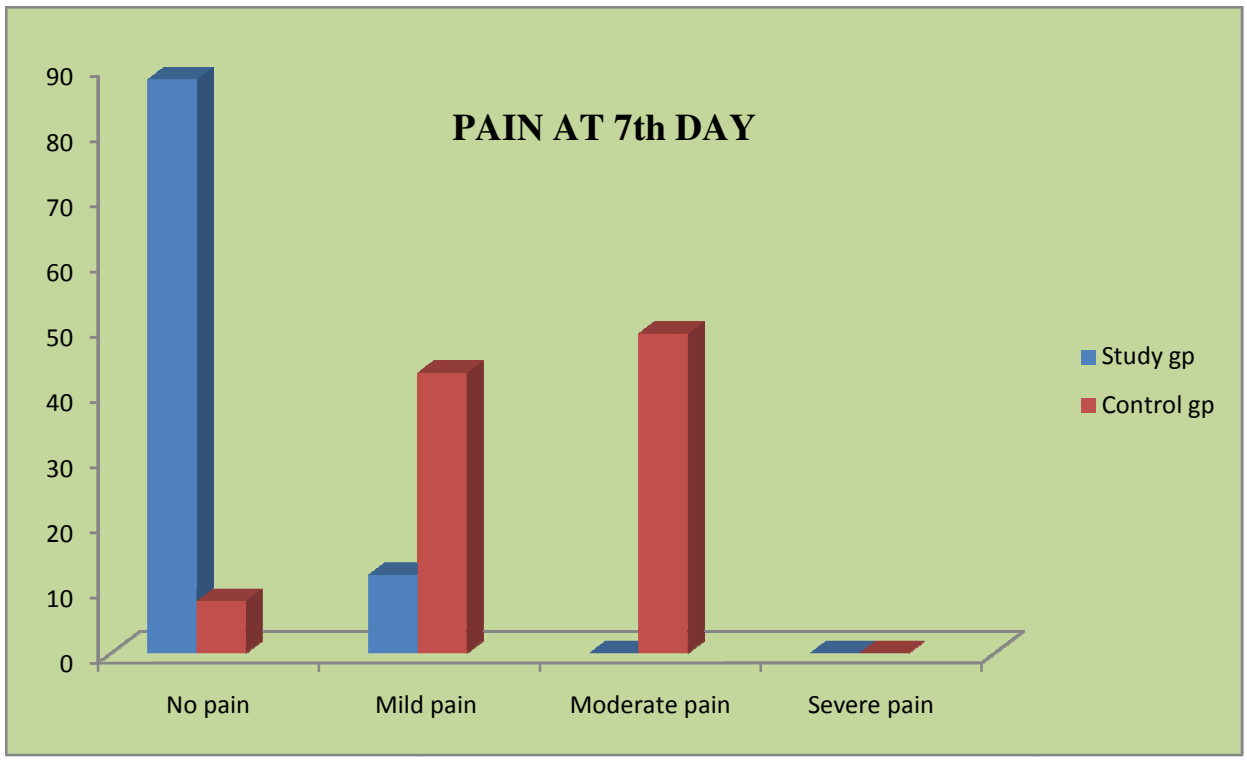

PAIN AT 48 HRS
90
80
70
60
50
40
30
20
10
0
No Pain
Mild pain
Moderate pain
Severe pain
Study gp
Control gp

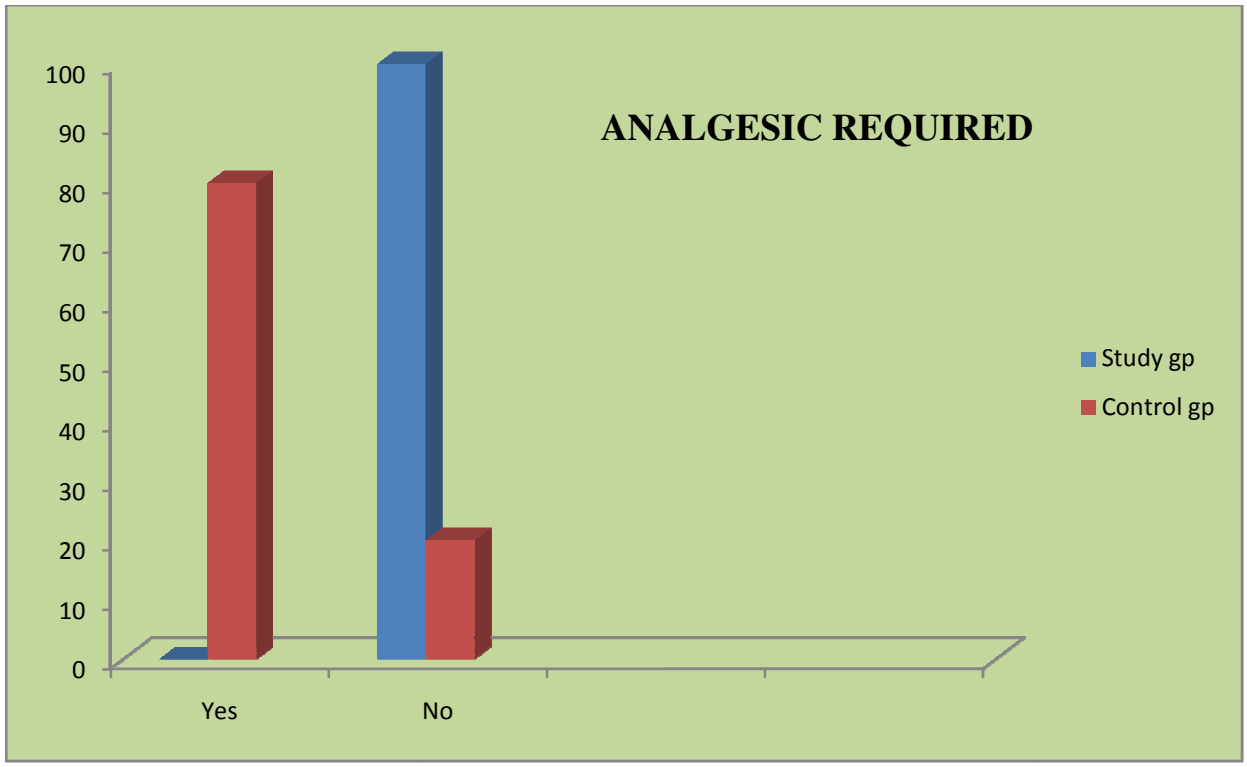

ANALGESIC REQUIRED
100
90
80
70
60
50
40
30
20
10
0
Yes
No
Study gp
Control gp

PAIN AT 7th DAY

Pain at 7th day	Study group	Control group	P value
No pain	88 (91.7%)	8 (8.3%)	0.000
Mild pain	12 (21.8%)	43 (78.25)	0.000
Moderate pain	0	49 (49%)	
Severe pain	0	0	
Analgesic required	0	80 (80%)	

On 7^{th} day, 96% of the patients had no pain, of which 88 (91.7%) belong to the study group compared to 8 (8.3%) of the control group. Among the 55 patients, who had mild pain 12 (21.8%) were in the study group and 43 (78.2%) were in the control group. None of the patients in the study group had moderate pain whereas 49 patients in the control group had moderate pain. No patients in the study group required analgesics compared to 80% of the control group, who were in need of analgesics. Hence there is statistically significant reduction in the prevalence of pain in the study group ($p<0.05$).

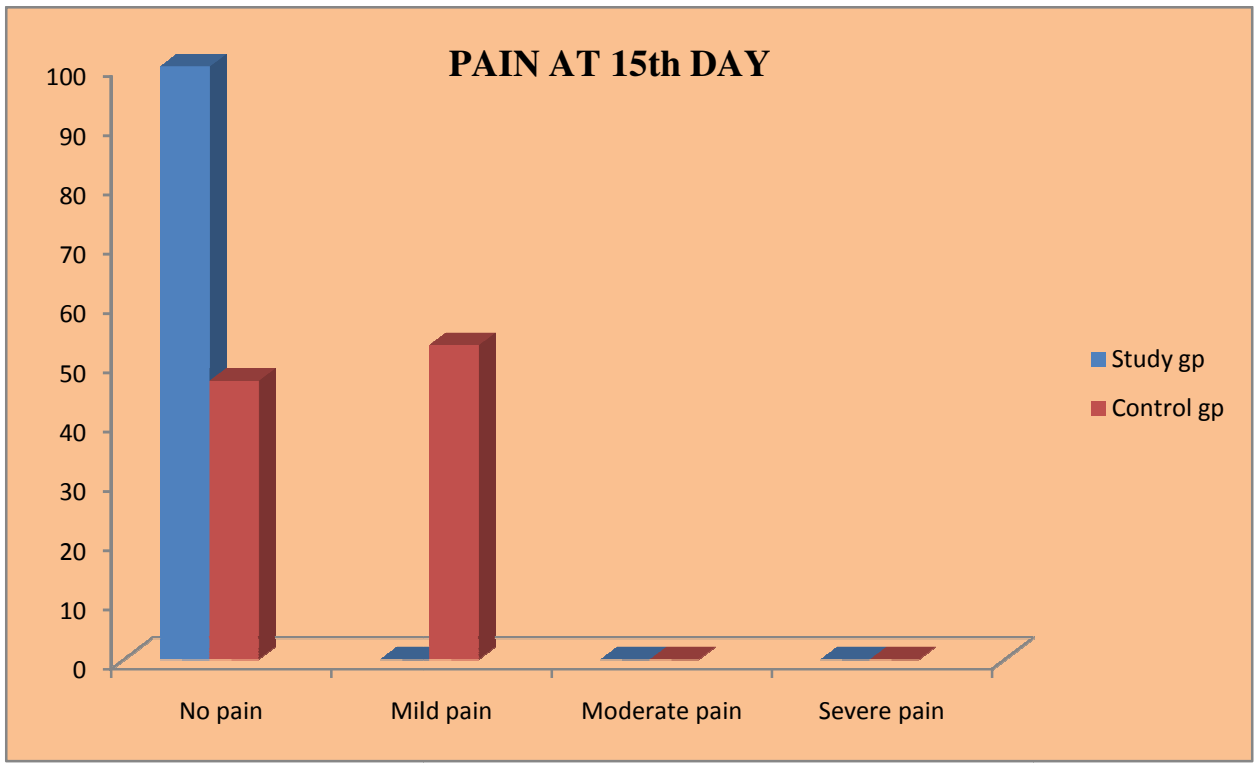

PAIN AT 7th DAY
90
80
70
60
50
40
30
20
10
0
No pain
Mild pain
Moderate pain
Severe pain
Study gp
Control gp

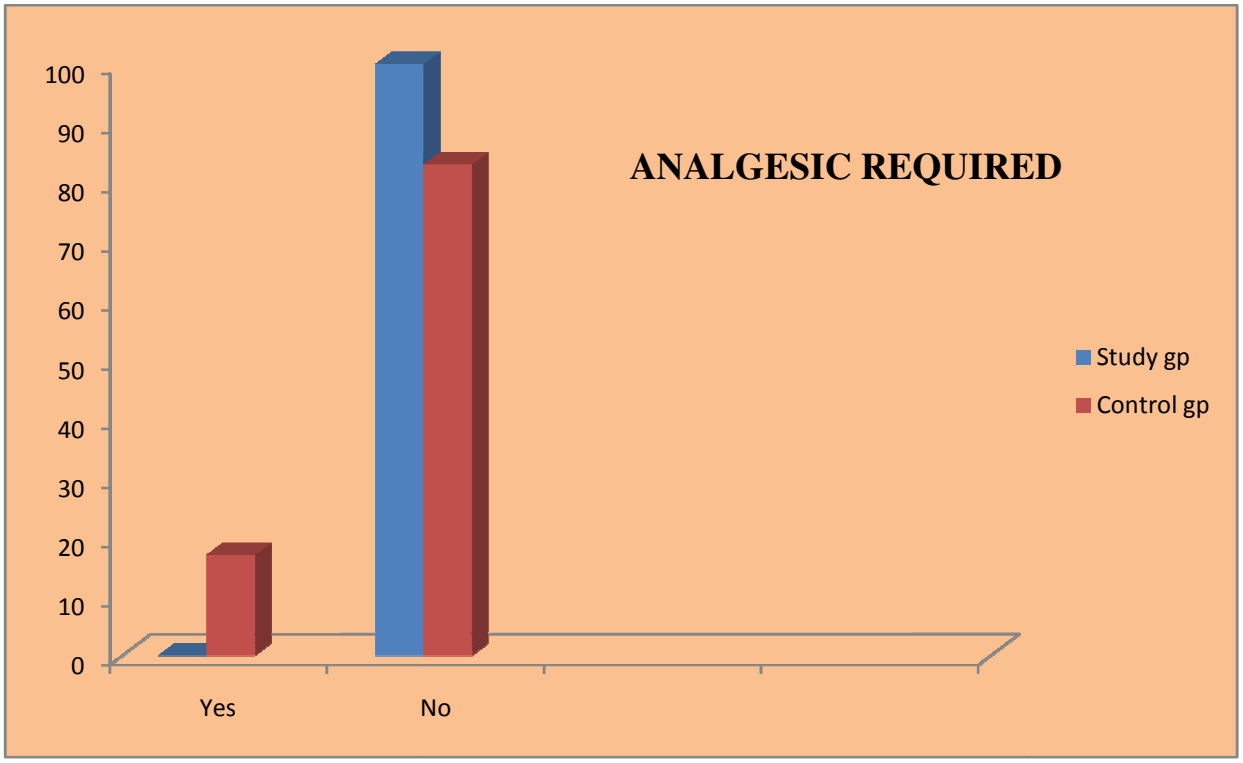

ANALGESIC REQUIRED
100
90
80
70
60
50
40
30
20
10
0
Yes
No
Study gp
Control gp

PAIN AT 15th DAY

Pain at 15th day	Study group	Control group	P value
No pain	100	47	0.000
Mild pain	0	53	0.000
Moderate pain	0	0	
Severe pain	0	0	
Analgesic required	0	17	0.000

None of the patients in both the groups experienced moderate to severe pain. Yet 53% of patients in the control group experienced mild pain while no one in the study group experienced even that mild pain. Similarly, no one in the study group required analgesic, while 17% of the patients in the control group required analgesic. Statistically significant correlation was found in the study group in terms of pain perception and analgesic requirement ($p<0.05$).

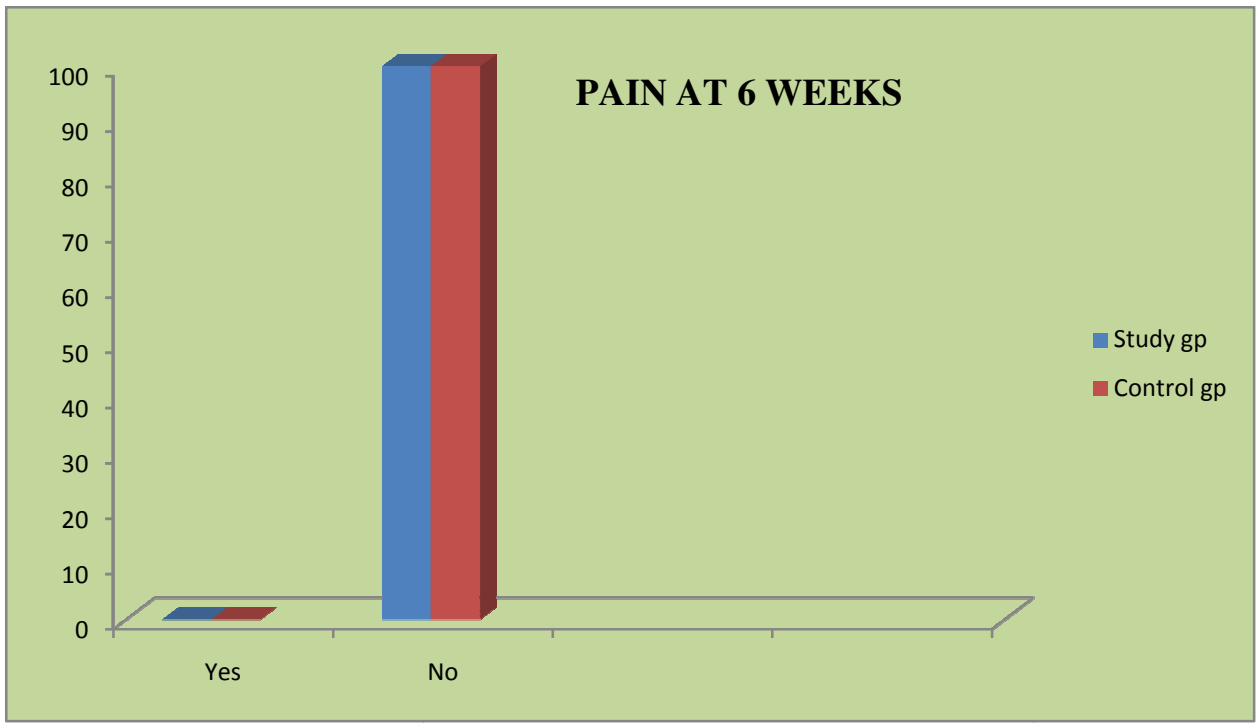

PAIN AT 15th DAY
100
90
80
70
60
50
40
30
20
10
0
No pain
Mild pain
Moderate pain
Severe pain
Study gp
Control gp

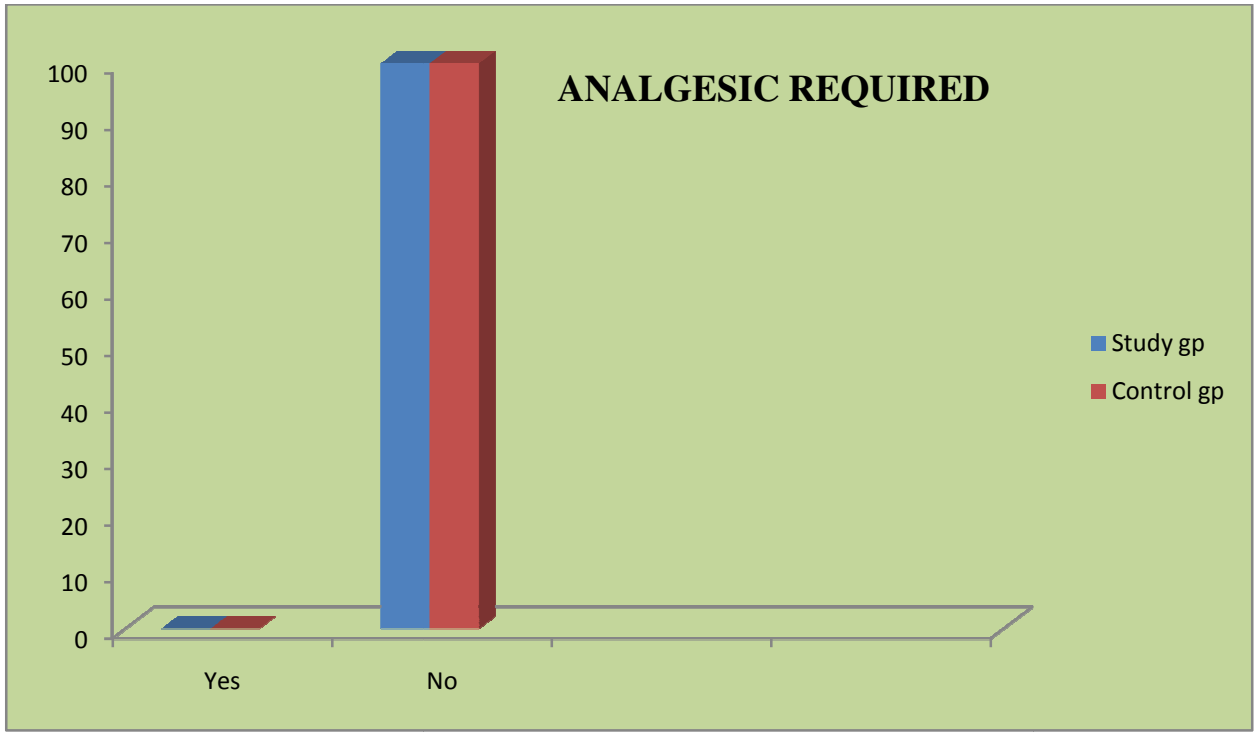

ANALGESIC REQUIRED
100
90
80
70
60
50
40
30
20
10
0
Yes
No
Study gp
Control gp

PAIN AT 6 WEEKS

	Study group	Control group
No pain	100	100
Analgesic required	0	0

None of the patients in both the groups experienced pain and hence required no analgesic.

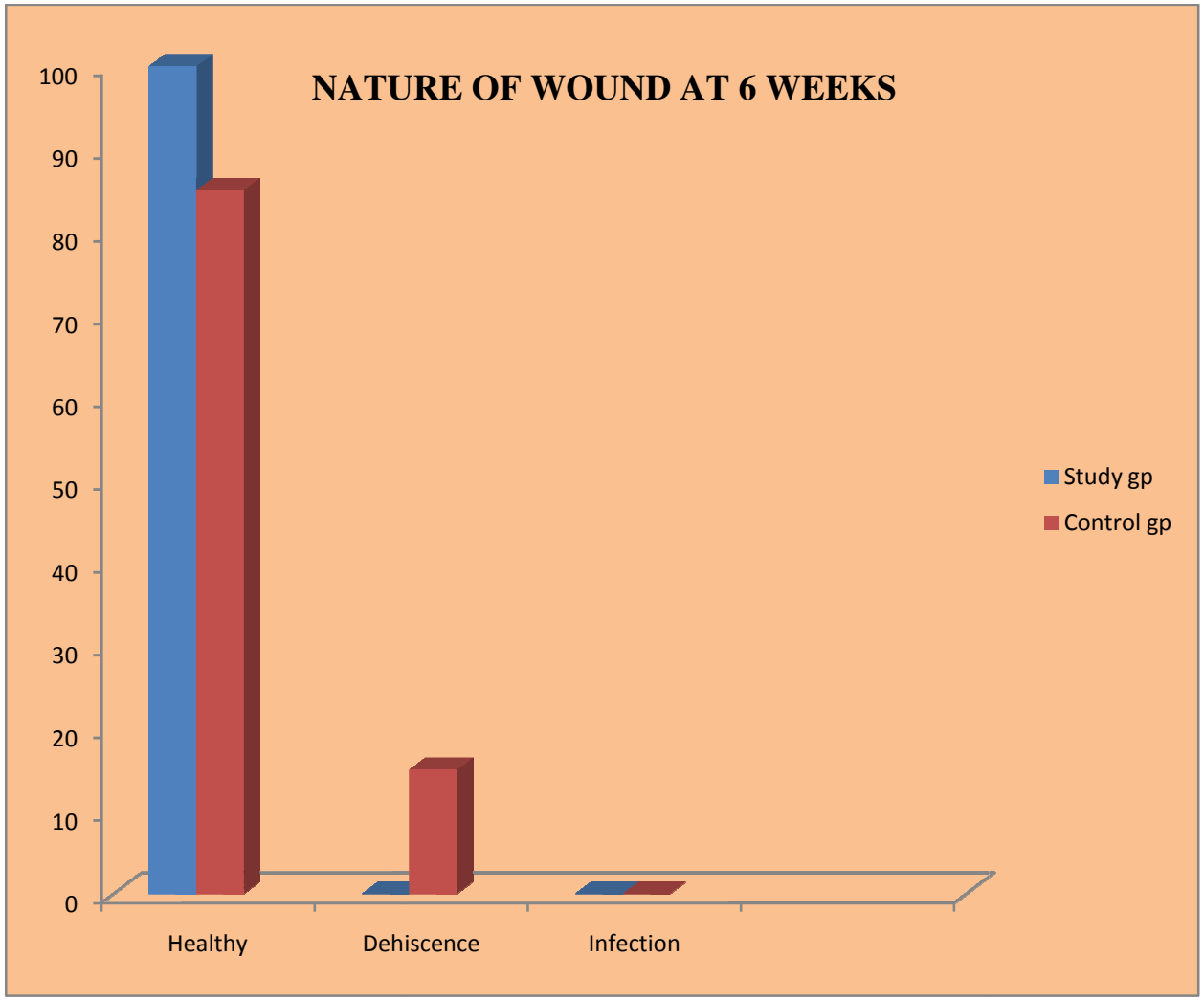

PAIN AT 6 WEEKS
100
90
80
70
60
50
40
30
20
10
0
Yes
No
Study gp
Control gp


ANALGESIC REQUIRED
100
90
80
70
60
50
40
30
20
10
0
Yes
No
Study gp
Control gp

NATURE OF WOUND AT 6 WEEKS

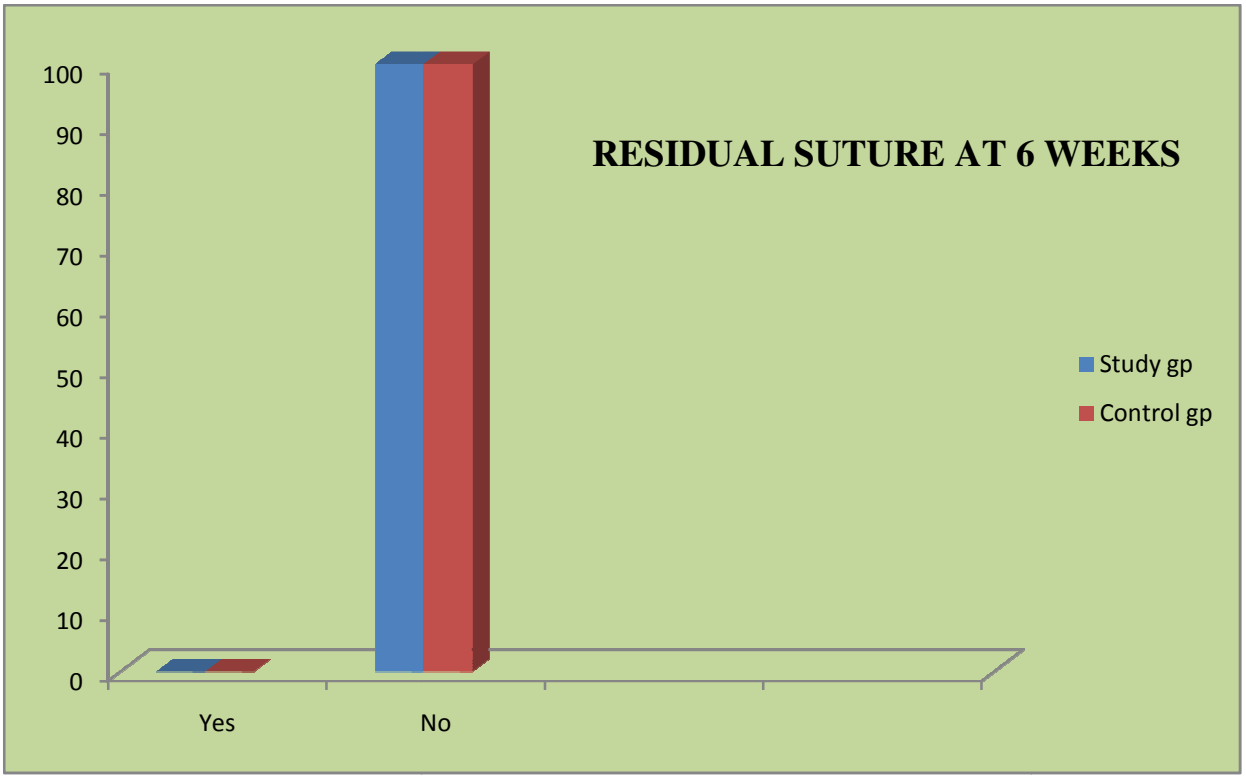
Nature of wound at 6 weeks	Study group	Control group	P value
Healthy	100	85	0.000
Dehiscence	0	15	0.000
Infection	0	0	

15% of the patients in the control group had wound dehiscence compared to none in the study group. Of the 15 patients, 11 had only skin dehiscence, while the rest required re-suturing. There is a statistical significance in the occurrence of wound dehiscence in the control group ($p<0.05$).


NATURE OF WOUND AT 6 WEEKS
100
90
80
70
60
50
40
30
20
10
0
Healthy
Dehiscence
Infection
Study gp
Control gp

RESIDUAL SUTURE AT 6 WEEKS

		Study group	Control group
Residual suture at 6 weeks	yes	0	0
	no	100	100

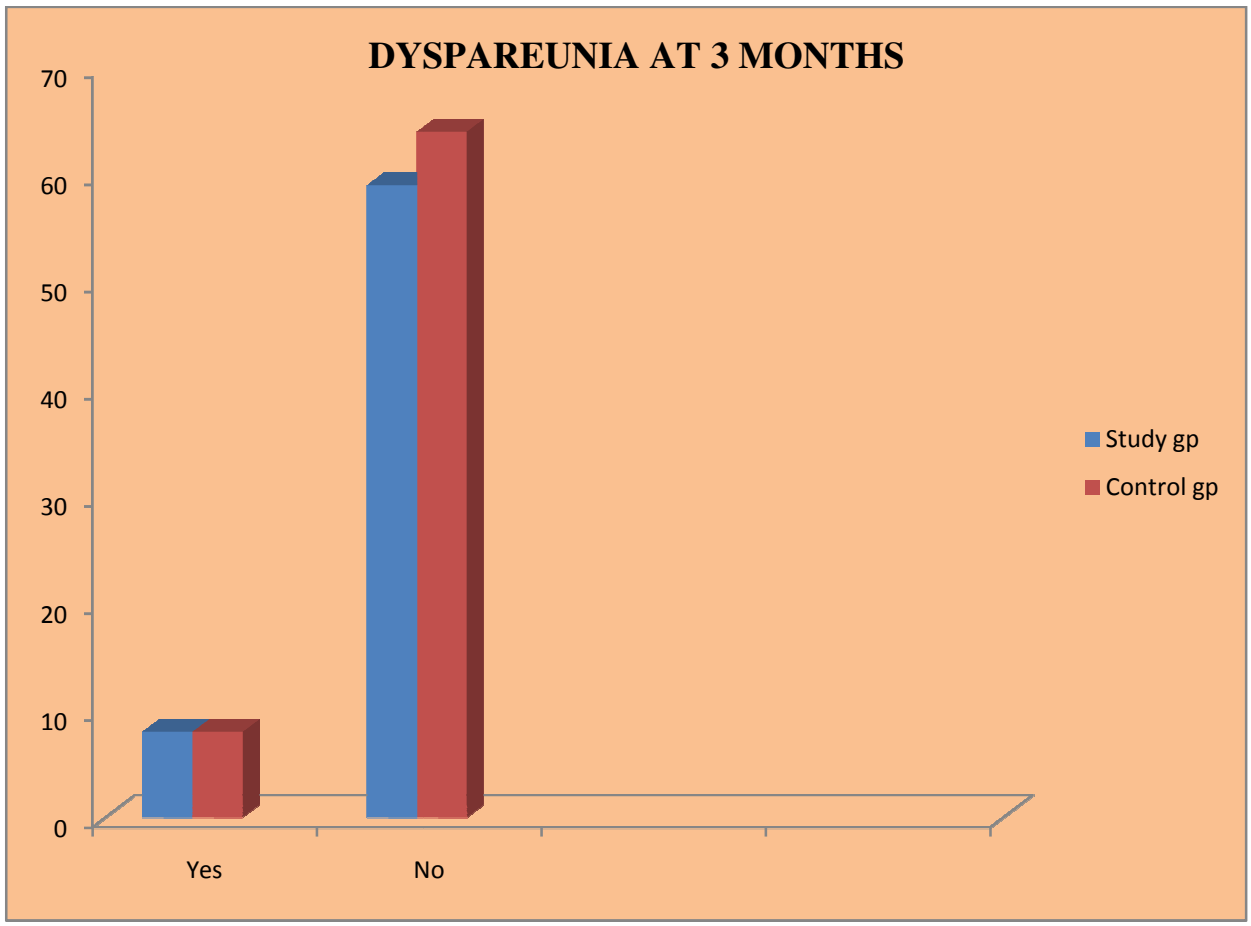


None of the patients in both the groups had retained suture material at the end of 6 weeks and hence required no suture removal.

DYSPAREUNIA

Dyspareunia	Study group	Control group
Yes	8 (12.4%)	8 (10.7%)
No	59 (88.0%)	64 (88.8%)
No data	33	28

Data could not be collected from 33 and 28 patients of the study group and control group respectively. They had not yet resumed their sexual life postpartum. There was no statistically significant difference in the rate of dyspareunia between the two groups (12.4% vs. 10.7%).


DYSPAREUNIA AT 3 MONTHS
70
60
50
40
30
20
10
0
Yes
No
Study gp
Control gp

Discussion

Because of the high frequency of pain and discomfort felt by women after vaginal birth, identifying even a modest amount of improvement would be important.

Parity

In the present study, 77.5% of women who had episiotomy or perineal laceration repair were primi. Both the groups were similar in terms of mean parity, 84% in the study group and 81% in the control group. This is similar to the study by Shah PK et al which included 226 women in the trial. The mean parity was 1.26 in the polyglactin and 1.41 in the chromic catgut group in their study.

Short term pain

In our present study, there was significant difference in pain perception at 48 hours postpartum. Analgesic was given to all the subjects. Only 19.2% of the study group experienced severe pain, compared to 80.8% of the control group.

Pain started to improve from third day onwards. Only 49% in the control group while, none in the study group experienced moderate pain on day seven.

On the 15th day, none of the women in the polyglactin group complained of pain, compared to 53 of the chromic catgut group who experienced mild pain, which was statistically significant.

There was no analgesic required in the study group while 80% of the control group was in need of analgesics. Women in the polyglactin group reported significantly less pain (21.8% vs. 78.2%). Analgesic requirement was nil on the 15th day in the study group whereas 17% of women in the chromic catgut group still required analgesics.

This is similar to the study conducted in 150 patients by Kurien Joseph et al in 2008.

Pain at 2nd day	**Polyglactin 910**	**Chromic catgut**
No pain	5 (10%)	1 (2%)
Mild pain	21 (42%)	10 (22%)
Moderate pain	20 (40%)	31 (62%)
Severe pain	4 (8%)	8 (16%)
Analgesic given	50 (100%)	50 (100%)

Pain at 7th day	Polyglactin 910	Chromic catgut
No pain	34 (68%)	13 (26%)
Mild pain	12 (24%)	18 (36%)
Moderate pain	4 (8%)	15 (30%)
Severe pain	0 (0%)	4 (8%)
Analgesic pain	6 (12%)	25 (50%)

Fewer women in the polyglactin (Vicryl rapide) group experienced short term pain compared to chromic catgut group; the results are statistically insignificant ($P>0.05$). From the 7th day onwards pain perception was lower in the polyglactin group in comparison with chromic catgut group and that was statistically significant. Analgesic requirement was low in the polyglactin group after the 7th day and was nil after the 30th day, while 18% of the women in the chromic catgut groups required analgesics even after the 30th day

Masson et al studied the repair of 2000 episiotomies with polyglactin 910 (Vicryl rapide). There was statistically significant difference in the short term pain perception.

Total	No pain	Bearable pain	Unbearable pain
2000	1979	20	1

In the Ipswich childbirth study: A randomized comparison of polygalctin 910 with chromic catgut for postpartum perineal repair in 1780 women between 1992 and 1994 showed that significantly fewer women in the polyglactin 910 reported pain at 48 hours (59% vs. 67%).

McElhinney B R et al (1996), recruited 153 women into the study, comparing vicryl rapide with vicryl. No difference in perineal pain was noted between the two groups at 24 hours, using VAS. The type of suture material used created no difference in pain score even on day three.

Shah P K et al studied polyglactin 910 with chromic catgut for postpartum episiotomy repair in 226 women. Significantly fewer women of the chromic catgut group reported pain at 48 hours (55.1% vs. 61.1%).

Guideline no.23 of the Royal College of Obstetricians and gynecologists showed that the absorbable synthetic material for repair of perineal trauma is associated with less short term pain.

Greenberg JA et al in their study in 1361 patients, Fast-absorbing polyglactin in 459 and chromic catgut in 449 patients were used for perineal repair. At 24-48hrs, subjects in the fast-absorbing polyglactin group showed statistically significant reduction in uterine cramping pain (25% vs. 34%).

Kettle C and Johanson RB (2000) reviewed eight randomized trials from the Cochrane Pregnancy and Childbirth Group trails register. Polyglactin group was associated with less pain in first three days compared to catgut group.(odds ratio 0.62, confidence interval 0.54 to 0.71).

Gemynthe et al conducted a comparative study in 308 women between polyglactin 910(Vicryl rapide) (155) and polyglactin 910 (153). They found no statistical difference between the two groups in terms of short term pain on second, fifth day and two weeks postpartum.

Long term pain (6 weeks)

Both the group of patients was comfortable without pain at 6 weeks. None of them required analgesics.

Similar findings were observed by Kurien Joseph et al on the 42nd day (100% in polyglactin group vs. 98% in catgut group). Only one (2%) of the patients from the catgut group complained of mild pain. While 4 (8%) of the catgut group required analgesics with none in the polyglactin group (0%).

Nature of wound at 6 weeks

Our study showed a higher incidence of wound dehiscence in the control group compared to the study group (15% of polyglactin group vs. 0% of the study group). There is a statistical significance with $p<0.05$.

Of 118 women in the study of McElhinney B R 0% of patients sutured with polyglactin 910 experienced wound problems like gaping, infection or residual material requiring, compared with 1.7% of polyglactin 910 patients.

Kurien Joseph et al in their study showed no significant difference in wound healing in the three groups.

Cochrane database meta-analysis review by Kettle et al showed more women in the chromic catgut group to have wound dehiscence and required re-suturing than those in the polyglactin and polyglactin (Vicryl rapide) groups.

Mackrodt et al's study revealed that there was no difference in wound healing between the polyglactin and chromic catgut group.

Our study showed statistically significant difference with the use of rapidly absorbing polyglactin in terms of pain relief, analgesic required and wound healing.

Residual suture at 6 weeks

Our study showed no residual suture material in either group at the end of 6 weeks.

The suture material in the polyglactin (Vicryl rapide) group was completely absorbed but visible sutures in 28% of polyglactin and 18% of chromic catgut group in the Kurien Joseph et al study.

Of the polyglactin group, 12% needed suture removal in the Mackrodt et al study.

Shah P K et al, in their study reported that more women in the polyglactin 910 group required suture removal than chromic catgut (12% vs. 7%).

Similar finding like our study was found in the Greenberg JA et al. There was no difference in residual suture for fast absorbing polyglactin 910 and chromic catgut.

Kettle C et al showed that less suture removal was done with the more rapidly absorbed polyglactin than with standard polyglactin (3% vs. 13%).

Our study shows no statistically significant difference between the rapidly absorbed polyglactin and chromic catgut in terms of the need for suture removal.

Dyspareunia at 3 months

No statistically significant difference between the two groups was noted in our study.

This is similar to the Cochrane systematic review of eight randomized controlled trials by Kettle C and Johanson R B involving 3642 women. There was no clear difference in terms of long term pain and dyspareunia in the absorbable synthetic when compared to catgut suture material.

Mackrodt C et al and Shah P K et al also showed no clear difference between the polyglactin 910 and chromic catgut group in terms of dyspareunia or failure to resume pain free intercourse.

McElhinney B R et al in their study showed a statistically significant difference (t- value 2.440). At twelve weeks only 5% of polyglactin(Vicryl rapide) patients complained of dyspareunia when compared to 20% of the standard polyglactin group.

In our study there is no significant difference in the rate of dyspareunia with the use of rapidly absorbing polyglactin and chromic catgut.

Summary

In this study, the use of a rapidly absorbing form of synthetic absorbable suture material, in the repair of episiotomy or perineal laceration in 100 patients during the study period February 2012 to July 2012, were simultaneously compared with the traditional natural absorbable suture material, at ISO KGH Hospital for Women and Children, Triplicane, Chennai.

- The mean age group of the studied women was 21.77 years. The distribution of the women in the age group 21-25 was relatively higher.
- Among the studied women, 77.5% were Primi gravida.
- With the use of rapidly absorbing polyglactin 910, there was a significant reduction (p=0.000) in the short term pain, 19 compared to 80 in the control group.
- When the analgesic requirement was compared on the 7^{th} day, there was significant reduction in the (0%) study group, as compared to the control group (80%).
- Analgesic requirement at day 15 was compared and there was significant reduction in the study group (0%), compared to the control group (17%).

- With regard to wound dehiscence and the need for resuturing, there was statistically significant difference in the control group (15%), compared to the study group (0%).
- There was no statistical significance between the two groups in terms of dyspareunia (12.4% vs. 10.7%).

Conclusion

Fast-absorbing form of Polyglactin seems to be effective in reducing some of the morbidity associated with perineal repair following childbirth.

- There was significant reduction in the short term pain.
- There was significant reduction in the need for analgesia
- The incidence of wound dehiscence was markedly reduced and hence the need for resuturing.
- There was no need for suture removal.

Our study shows the distinct advantage of polyglactin (rapidly absorbable) over chromic catgut, as far as subjective pain perception, analgesic requirement, wound dehiscence and re-suturing are concerned. Hence rapidly absorbable form of polyglactin may be considered in place of traditional chromic catgut for perineal repair in all government maternity units.

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S No	Name	Age	Obstetric score				Suture material		Pain at 48 hrs	Analgesic required	Pain at 7 th day	Analgesic required	pain at 15 th day	Analgesic required	Pain at 6 weeks	Analgesic required	Nature of wound at 6 Weeks		Residual Suture Material at 6 Weeks	dyspareunia at 3 months
			G	P	L	A											Healthy	Dehiscence	Yes/No	
1	Valarmathy	22	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
2	Parveen banu	25	4	1	1	2	V		2	yes	0	no	0	no	0	no	H		no	no
3	Shobana	22	1	0	0	0	V		3	yes	1	no	0	no	0	no	H		no	no
4	Malliga Sultana	23	1	1	1	0	V		2	yes	0	no	0	no	0	no	H		no	no
5	Jayalakshmi	23	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
6	Amsavalli	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
7	Nirmala Devi	22	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
8	Ragaveni	21	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
9	Jeyenthi	30	4	1	1	2	V		2	yes	0	no	0	no	0	no	H		no	no
10	Saraswathy	24	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
11	Sarasu	22	1	0	0	0	V		3	yes	0	no	0	no	0	no	H		no	yes
12	Maheshwari	21	1	0	0	0	V		3	yes	0	no	0	no	0	no	H		no	NA
13	Priyadarshini	22	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
14	Jacquelene Mary	28	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
15	Geetha	28	2	1	1	0	V		2	yes	0	no	0	no	0	no	H		no	NA
16	Divya	19	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
17	Saranya	21	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
18	Saranya	21	2	1	1	0	V		3	yes	1	no	0	no	0	no	H		no	NA
19	Bharathi	27	2	1	1	0	V		2	yes	0	no	0	no	0	no	H		no	NA
20	Surekha	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	yes
21	Anitha	23	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
22	Zeenath	29	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
23	Saradha	23	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
24	Shakira	27	2	1	1	0	V		2	yes	0	no	0	no	0	no	H		no	NA
25	Zohara	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
26	Sudha	27	4	1	1	2	V		3	yes	0	no	0	no	0	no	H		no	yes
27	Banupriya	22	3	1	1	1	V		2	yes	0	no	0	no	0	no	H		no	NA
28	Megala	23	2	1	1	0	V		2	yes	0	no	0	no	0	no	H		no	no
29	Zubeidha Parveen	18	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
30	Hemamalini	25	4	1	1	2	V		2	yes	0	no	0	no	0	no	H		no	no
31	Vijaya	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
32	Seetha	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
33	Ishrath Begum	24	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
34	Lakshmi	27	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
35	Sasikala	24	1	0	0	0	V		3	yes	1	no	0	no	0	no	H		no	NA
36	Pallavi	21	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
37	Sasikala	21	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
38	Radhika	22	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
39	Lavanya	22	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
40	Sandhiya	19	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
41	Sumithra	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	yes
42	Jaya	23	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
43	Angel	21	1	0	0	0	V		3	yes	0	no	0	no	0	no	H		no	NA
44	Sumathy	30	4	1	1	2	V		2	yes	0	no	0	no	0	no	H		no	NA
45	Suji	22	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
46	Subhashini	25	1	0	0	0	V		3	yes	1	no	0	no	0	no	H		no	no
47	Rajalakshmi	25	2	1	1	0	V		2	yes	0	no	0	no	0	no	H		no	no
48	Alamelu	25	3	1	1	1	V		2	yes	0	no	0	no	0	no	H		no	no
49	Mohanapriya	22	2	0	0	1	V		2	yes	0	no	0	no	0	no	H		no	NA
50	Priyadarshini	22	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	yes
51	Janani	19	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
52	Rajeshwari	23	1	0	0	0	V		3	yes	0	no	0	no	0	no	H		no	no
53	Lavanya	22	2	1	1	0	V		2	yes	0	no	0	no	0	no	H		no	no
54	Yuvarani	22	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
55	Vasanthi	21	1	0	0	0	V		3	yes	1	no	0	no	0	no	H		no	no
56	Bhavya	19	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
57	Madhumalathi	27	2	0	0	1	V		2	yes	0	no	0	no	0	no	H		no	NA
58	Bhavani	21	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
59	Lakshmi	25	2	1	1	0	V		2	yes	0	no	0	no	0	no	H		no	NA
60	Manvizhi	21	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
61	Thamaraiselvi	22	1	0	0	0	V		3	yes	0	no	0	no	0	no	H		no	yes
62	Kalaivani	22	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA

63	Shakila	20	1	0	0	0	V		3	yes	1	no	0	no	0	no	H		no	no
64	Desarani	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
65	Shailaja	23	3	1	1	1	V		2	yes	0	no	0	no	0	no	H		no	no
66	Tamilarasi	24	2	0	0	1	V		2	yes	0	no	0	no	0	no	H		no	NA
67	Radhika	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
68	Sudha	29	3	1	1	1	V		3	yes	0	no	0	no	0	no	H		no	no
69	Sivashankari	23	2	1	1	0	V		3	yes	1	no	0	no	0	no	H		no	no
70	Manju	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
71	Divya	19	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
72	Anitha	21	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
73	Savitha	29	2	1	1	0	V		3	yes	0	no	0	no	0	no	H		no	NA
74	Kalpana	22	2	0	0	1	V		2	yes	0	no	0	no	0	no	H		no	yes
75	Sheeladevi	21	1	0	0	0	V		2	yes	0	no	0	no	0	o	H		no	NA
76	Kalaivani	25	3	1	1	1	V		2	yes	0	no	0	no	0	no	H		no	NA
77	Nirmala	22	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
78	Almas	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
79	Savitha	23	2	1	1	0	V		3	yes	1	no	0	no	0	no	H		no	NA
80	Hazira banu	20	1	0	0	0	V		3	yes	1	no	0	no	0	no	H		no	NA
81	Pown	27	1	0	0	0	V		3	yes	0	no	0	no	0	no	H		no	yes
82	Meera	25	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
83	Rahmath Nisha	21	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
84	Subadhra Devi	23	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
85	Shashikala	26	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
86	Shobana	29	2	1	1	0	V		2	yes	0	no	0	no	0	no	H		no	no
87	Bhuvaneshwari	19	1	0	0	0	V		3	yes	0	no	0	no	0	no	H		no	no
88	Sridevi	25	2	1	1	0	V		2	yes	0	no	0	no	0	no	H		no	no
89	Rajeshwari	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
90	Devi	26	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
91	Shameem	21	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
92	Durga Devi	24	1	0	0	0	V		3	yes	1	no	0	no	0	no	H		no	no
93	Sujatha	23	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
94	Shabana Begum	26	2	1	1	0	V		2	yes	0	no	0	no	0	no	H		no	no
95	Sathya	20	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
96	Nithya	21	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	NA
97	Saritha	20	1	0	0	0	V		3	yes	1	no	0	no	0	no	H		no	no
98	Manju	22	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
99	Iyyammal	27	1	0	0	0	V		3	yes	1	no	0	no	0	no	H		no	no
100	Vedha	26	1	0	0	0	V		2	yes	0	no	0	no	0	no	H		no	no
1	Sakthipriya	29	2	1	1	0		C	2	yes	2	yes	1	no	0		H		no	no
2	Kasturibai	23	1	0	0	0		C	3	yes	2	yes	1	no	0		H		no	no
3	Geetha	26	1	0	0	0		C	3	yes	1	yes	1	no	0		H		no	no
4	Kavya	23	1	0	0	0		C	3	yes	2	yes	1	yes	0		H		no	no
5	Maheshwari	29	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	no
6	Gowthami	23	1	0	0	0		C	3	yes	1	no	1	no	0		H		no	yes
7	Saritha	23	1	0	0	0		C	2	yes	1	yes	0	no	0		H		no	no
8	Surya	22	2	1	1	0		C	2	yes	2	yes	1	yes	0			D	no	no
9	Nehan	23	1	0	0	0		C	3	yes	1	yes	1	no	0		H		no	NA
10	Sribala	22	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	NA
11	Nithya	26	1	0	0	0		C	3	yes	1	no	1	no	0		H		no	no
12	Kanchana	25	1	0	0	0		C	3	yes	2	yes	1	yes	0		H		no	no
13	Kamala devi	19	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	no
14	Latha	26	2	1	1	0		C	2	yes	2	yes	1	no	0		H		no	no
15	Gomathi	29	2	1	1	0		C	2	yes	1	no	0	no	0		H		no	no
16	Salma	20	1	0	0	0		C	3	yes	1	yes	0	no	0			D	no	no
17	Kalpana	19	1	0	0	0		C	3	yes	0	no	1	yes	0		H		no	no
18	Geetha	33	4	1	1	2		C	2	yes	1	yes	1	yes	0		H		no	NA
19	Amla	24	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	NA
20	Rekha	22	1	0	0	0		C	3	yes	1	yes	0	no	0		H		no	NA
21	Sudha	25	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	yes
22	Rema	28	1	0	0	0		C	3	yes	1	no	0	no	0			D	no	no
23	Jayalakshmi	27	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	no
24	Revathi	25	1	0	0	0		C	3	yes	2	yes	1	no	0		H		no	no
25	Manjula	26	1	0	0	0		C	3	yes	2	yes	1	yes	0		H		no	yes
26	Revathi	27	1	0	0	0		C	3	yes	1	yes	1	yes	0		H		no	NA
27	Amul	23	1	0	0	0		C	3	yes	2	yes	1	no	0		H		no	no
28	Jayalakshmi	26	1	0	0	0		C	3	yes	1	no	0	no	0		H		no	no
29	Banupriya	23	1	0	0	0		C	3	yes	1	no	0	no	0		H		no	NA
30	Revathi bai	27	2	1	1	0		C	2	yes	0	no	1	no	0			D	no	NA
31	Devi	28	1	0	0	0		C	3	yes	2	yes	1	no	0		H		no	NA
32	Vanitha	27	1	0	0	0		C	3	yes	1	yes	1	no	0		H		no	no

33	Venilla	23	1	0	0	0		C	3	yes	1	yes	1	yes	0		H		no	no
34	Grace Mary	24	2	1	1	0		C	2	yes	2	yes	0	no	0		H		no	no
35	Keerthi	24	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	no
36	Seetha	22	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	NA
37	Lakshmi	24	2	1	1	0		C	2	yes	1	yes	1	yes	0		H		no	NA
38	Kalaivani	22	1	0	0	0		C	3	yes	1	no	1	no	0		H		no	yes
39	Agnes	23	1	0	0	0		C	3	yes	0	no	0	no	0		H		no	no
40	Rizwana	25	1	0	0	0		C	3	yes	1	yes	1	no	0		H		no	no
41	Anitha	24	1	0	0	0		C	3	yes	1	yes	0	no	0		H		no	no
42	Viji	21	1	0	0	0		C	3	yes	1	yes	1	no	0		H		no	no
43	Gayathri	22	1	0	0	0		C	3	yes	1	yes	1	no	0			D	no	no
44	Ramya	23	1	0	0	0		C	3	yes	2	yes	1	yes	0		H		no	no
45	Revathi	23	1	0	0	0		C	3	yes	0	no	0	no	0		H		no	no
46	Jamuna rani	21	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	NA
47	Geetha	22	1	0	0	0		C	3	yes	2	yes	0	no	0			D	no	NA
48	Porselvi	24	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	no
49	Gandhimathi	25	2	1	1	0		C	2	yes	1	yes	1	no	0		H		no	NA
50	Revathi	25	1	0	0	0		C	3	yes	1	no	1	no	0		H		no	no
51	Shabana	21	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	no
52	Manjula	24	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	no
53	Ramani	24	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	no
54	Aruna Mary	18	1	0	0	0		C	3	yes	1	yes	1	yes	0			D	no	NA
55	Porkalai	20	1	0	0	0		C	3	yes	2	yes	1	no	0		H		no	NA
56	Ramani	30	2	1	1	0		C	2	yes	2	yes	1	yes	0		H		no	yes
57	Kavitha	26	2	1	1	0		C	2	yes	2	yes	1	no	0		H		no	no
58	Suguna	24	1	0	0	0		C	3	yes	1	no	1	no	0		H		no	no
59	Muthulakshmi	22	1	0	0	0		C	3	yes	2	yes	1	no	0		H		no	yes
60	Sasikala	20	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	no
61	Deepa	19	1	0	0	0		C	3	yes	1	yes	0	no	0		H		no	no
62	Selvi	25	1	0	0	0		C	3	yes	1	no	0	no	0		H		no	no
63	Gowri	24	1	0	0	0		C	3	yes	1	yes	0	no	0		H		no	NA
64	Sasikala	20	1	0	0	0		C	3	yes	2	yes	1	no	0		H		no	no
65	Sanmathi	20	1	0	0	0		C	3	yes	2	yes	0	no	0			D	no	no
66	Nithya	22	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	NA
67	Ramalakshmi	23	1	0	0	0		C	3	yes	1	yes	1	yes	0		H		no	NA
68	Elakkiya	22	1	0	0	0		C	3	yes	1	no	0	no	0		H		no	NA
69	Salma Begum	20	1	0	0	0		C	3	yes	2	yes	0	no	0			D	no	no
70	Mary Mathilda	24	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	NA
71	Divya	25	2	1	1	0		C	2	yes	2	yes	1	no	0		H		no	no
72	Kalaivani	22	1	0	0	0		C	3	yes	1	yes	0	no	0		H		no	no
73	Maheshwari	20	1	0	0	0		C	3	yes	1	no	1	yes	0		H		no	no
74	Farhana	22	1	0	0	0		C	3	yes	0	no	0	no	0		H		no	no
75	Amudha	24	1	0	0	0		C	3	yes	1	no	0	no	0		H		no	no
76	Sindhumathi	28	2	1	1	0		C	2	yes	2	yes	1	no	0		H		no	no
77	Rajalakshmi	24	1	0	0	0		C	3	yes	1	yes	1	no	0		H		no	NA
78	Lakshmi	31	4	1	0	2		C	2	yes	2	yes	1	no	0		H		no	no
79	Dhanalakshmi	22	1	0	0	0		C	3	yes	1	yes	0	no	0		H		no	NA
80	Kalaivani	24	1	0	0	0		C	3	yes	0	no	0	no	0			D	no	no
81	Kasthuri	28	2	1	1	0		C	2	yes	1	yes	1	yes	0		H		no	yes
82	Jyotilakshmi	24	1	0	0	0		C	3	yes	2	yes	1	no	0		H		no	no
83	Geetha	20	1	0	0	0		C	3	yes	2	yes	1	no	0		H		no	no
84	Mythili	22	1	0	0	0		C	3	yes	1	yes	0	no	0		H		no	no
85	Indhu	24	1	0	0	0		C	3	yes	1	yes	1	no	0		H		no	NA
86	Rajeshwari	23	1	0	0	0		C	3	yes	2	yes	1	yes	0		H		no	NA
87	Sathya	25	2	1	1	0		C	2	yes	1	yes	1	no	0		H		no	NA
88	Kalpana	24	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	NA
89	Rajeshwari	22	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	yes
90	Jayachithra	20	1	0	0	0		C	3	yes	2	yes	1	no	0		H		no	no
91	Manjula	21	1	0	0	0		C	3	yes	0	no	1	no	0		H		no	no
92	Uma	26	3	1	0	1		C	2	yes	1	no	1	no	0		H		no	no
93	Lakshmi	26	2	1	1	0		C	2	yes	2	yes	0	no	0		H		no	no
94	Lakshmi	24	1	0	0	0		C	3	yes	2	yes	0	no	0			D	no	NA
95	Shanthi	25	2	1	1	0		C	2	yes	1	yes	0	no	0		H		no	no
96	Gayathri	23	1	0	0	0		C	3	yes	2	yes	0	no	0		H		no	no
97	Bhuvaneshwari	18	1	0	0	0		C	3	yes	1	yes	0	no	0			D	no	no
98	Jabeela	24	1	0	0	0		C	3	yes	0	no	1	no	0		H		no	no
99	Nithya	22	1	0	0	0		C	3	yes	2	yes	1	yes	0		H		no	no
100	Gomathi	20	1	0	0	0		C	3	yes	1	yes	1	no	0		H		no	no

KEY TO MASTER CHART

G - Gravida

P - Para

L - Live children

A -Abortion

V - Vicryl

C - Catgut

H -Healthy wound

D -Wound Dehiscence

I -Wound infection

Pain

0 -No pain

1 -Mild pain

2 -Moderate pain

3 - Severe pain

I

CONSENT FORM

STUDY TITLE : "COMPARATIVE STUDY OF EPISIOTOMY REPAIR ABSORBABLE SYNTHETIC VERSUS CHROMIC CATGUT SUTURE MATERIAL".

STUDY CENTRE : Institute of Social Obstetrics and Govt. KGH, Chennai.

PARTICIPANT NAME : **AGE:** **SEX**: **J.D.NO.**

I confirm that I have understood the purpose of procedure for the above study, I have the opportunity to ask the question and all my questions and doubts have been answered to my satisfaction.

I have been explained about the possible complications that may occur during the procedure, I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving any reason.

I understand that investigator, regulatory authorities and the ethics committee will not need my permission to look at my health records both in respect to the current study and any further research that may be conducted in relation to it, even if I withdraw from the study. I understand that my identity will not be revealed in any information released to third parties of published, unless as required under the law. I agree not to restrict the use of any or results that arise from the study.

I hereby consent to participate in this study of "**COMPARATIVE STUDY OF EPISIOTOMY REPAIR: ABSORBABLE SYNTHETIC VERSUS CHROMIC CATGUT SUTURE MATERIAL".**

Signature of Investigator: Place :

Date :

Investigators Name Institution

Signature / Thumb Impression of patient

Thanking you,

Yours faithfully,

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI -3

Telephone No : 044 25305301
Fax : 044 25363970

CERTIFICATE OF APPROVAL

To
Dr. Divya Selvaraju
PG in MDOG
KGH/ Madras Medical College, Chennai -3

Dear Dr. Divya Selvaraju

The Institutional Ethics committee of Madras Medical College, reviewed and discussed your application for approval of the proposal entitled " comparative study of episiotomy repair: Absorbable synthetic versus chromic catgut suture material" No. 17012012.

The following members of Ethics Committee were present in the meeting held on 27.01.2012 conducted at Madras Medical College, Chennai -3.

1. Prof. S.K. Rajan. MD -- Chairperson
2. Prof. Pregna B. Dolia MD -- Member Secretary
   Vice Principal, Madras Medical College, Chennai -3
   (Director , Institute of Biochemistry, MMC, Ch-3)
3. Prof. B. Kalaiselvi. MD -- Member
   Prof of Pharmacology ,MMC, Ch-3
4. Prof. Shruti Kamal MS -- Member
   Prof of Surgery, Madras Medical College , Ch-3
5. Thiru. S. Govindsamy. BA BL -- Lawyer

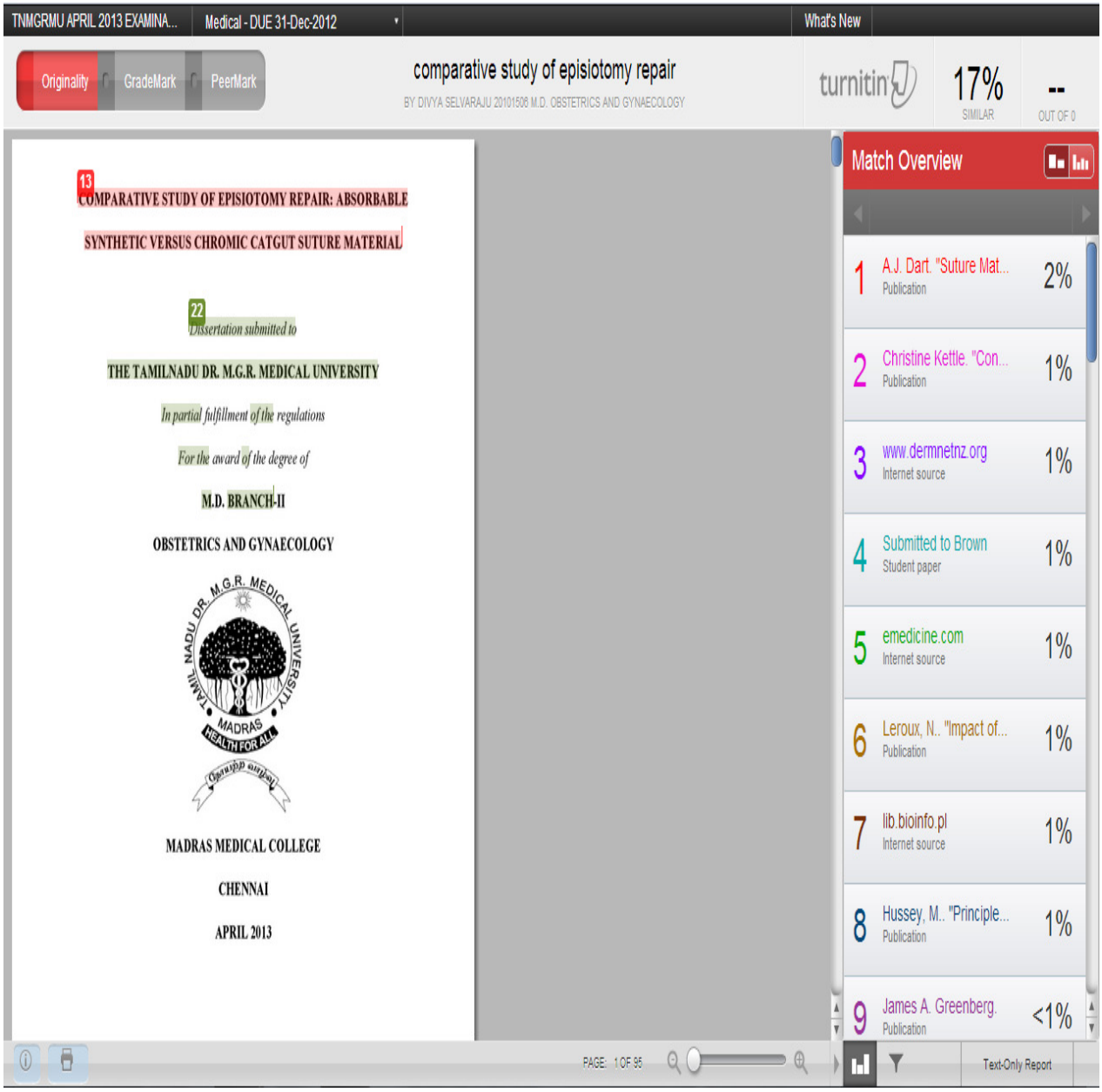
We approve the proposal to be conducted in its presented form.

Sd/ Chairman & Other Members

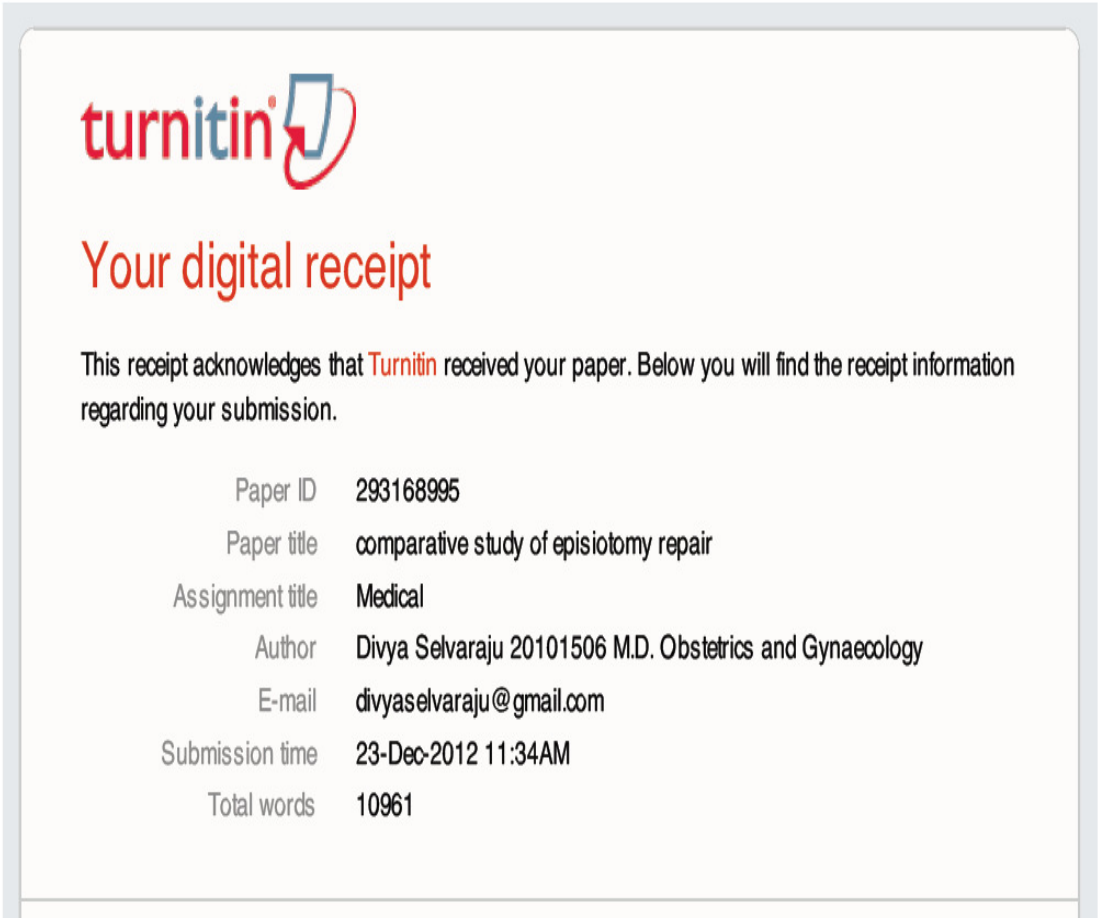
The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

Member Secretary, Ethics Committee

PLAGIARISM REPORT



DIGITAL RECEIPT OF PLAGIARISM



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E-mail	divyaselvaraju@gmail.com
Submission time	23-Dec-2012 11:34AM
Total words	10961

PROFORMA

Name IP No.

Age

Address Phone No

OBSTETRIC SCORE	G	P	L	A

Suture Material	VICRYL	CATGUT

Pain Perception

	No Pain	Mid	Mod	Severe	Analgesic required	
					Yes	No
At 48 hours						
On 7th day						
On 15th day						
At 6 weeks						

Nature of wound at 6 weeks	Healthy	Dehiscence	Infection

Residual suture material at 6 weeks	Yes	No

Dyspareunia at 3 months	Yes	No