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General Surgery

Comparitive Study of Anatomical Repair and Lichen steins Tension Free Meshplasty

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Abstract **Original Research Article**

Introduction: Inguinal hernias are very common and their repair is one of the commonest surgeries performed in all hospitals. Since the description of anatomical repairs of inguinal hernia of Bassini's and Shouldice, many new techniques for hernia repair have been introduced including Prolene mesh repair and Laparoscopic hernia repair. It is with the intent of comparing anatomical repairs of Bassini's and Shouldice with Prolene mesh repair, this study had been done. Comparision was done with respect to post-operative pain, infection, demographic profile, feasibility in selective group, type of inguinal hernia, duration of operation, hospital stay and expenditure. ***Materials and methods:*** The present study was carried out in the Department of General Surgery in G R Medical College, Gwalior, Madhya-Pradesh. This was prospective study that collected information from 100 patients from interview. All the patients between 2 – 80 years undergoing hernia surgery from July 2006 to October 2007 were included in the study. Those patients more than 80 years age, medical comorbidities, abdominal wall infection and contraindications to anaesthesia (General and or Spinal) were excluded from the present study. ***Result:*** In our study, there was male predominance of inguinal hernia. Most hernias were of indirect type (60%) compared to Direct hernia (39%) and pantaloons hernia (1%). Direct hernia was more evident in old age group (45-60 years) than indirect hernia (30-45 years). Lichtenstein's tension free meshplasty was comparatively costly and 7 % patients had persistent pain at operated site. The rates of infective complications were not significantly different. There were no recurrences in our study. Mean operative time was 85, 90 and 100 minutes respectively for Lichtenstein's tension free meshplasty, Bassini's repair and Shouldice repair. ***Conclusion:*** Our results suggest that a general hospital with high patient volume, good training and proper aseptic precautions, anatomical repairs are cheaper than prolene mesh repair, prolene mesh repair is also a better option for young patients and that presence of mesh did not showed any increased incidence of infection. Whenever posterior wall or local structure weakening is present, prolene mesh repair should be done. If properly done in selected patients Bassini's repair and Shouldice repair is as good as prolene meshplasty if not better but at the same time with less cost[10].

Keywords: Inguinal hernias, surgeries, Shouldice, demographic profile.

INTRODUCTION

Few Surgical Conditions Can Boast Of Such A Multitude Of Management Options As Inguinal Hernias. This Has Been A Bone Of Contention Amongst Surgeons Over What Would Constitute An Ideal Repair. Over The Last Two Decades, The Evolving Understanding Of Functional Anatomy And Physiology Of The Anterior Abdominal Wall And The Inguinal Canal Have Led To The Development Of Excellent Surgical Techniques, Which All But Wiped Out The Stigma Of The Unacceptable Results Of The Past[1].

The Surgeon Of Today Has A Vast Range Of Surgical Techniques At His Disposal, Ranging From Anatomical Repairs, To The Modern Laparoscopic Repairs. Amongst These, The Modified Lichtenstein Meshplasty Remains The Most Popular. This Popularity Can Be Attributed To Its Ease Of Learning, Safety And Low Recurrence Rates [1].

Frequent Occurrence Of Hernia In Inguinal Region, Enigmatic Quality Of The Aetiologic Background And Selection Of Treatment Method Make It One Of The Significant Parts Of Surgery. An Unacceptable Recurrence Rate And Prolonged Post-

Operative Pain (P In Small) And Recovery Time After Tissue Repair Along With Our Understanding Of The Metabolic Origin Of Inguinal Hernias Led To The Concept Of Tensionfree Hernioplasty-Lmr. Numerous Comparative Randomized Trials Have Clearly Demonstrated The Superiority Of The Tension-Tree Mesh Repair Over The Traditional Tissue Approximation Method. However, Tissue Repair Methods Like Bassini's Have the Advantage of Being Simple and Cost Effective. As Surgeons, As A Group, Have Moved Away From 'Technical Success' In The Form Of Low Recurrence Rates, As An Outcome Measure And Assessed Other End Points, Research Has Moved From The Least Recurrence To Least Complication Rate. The Present Study, A Comparative Study Between Mbr And Lmr, Was Deemed Appropriate As These Are Performed More Commonly In Our Hospital, Catering The Rural Population With An Aim To Prospectively Evaluate The Outcome Of Lmr (Tension-Free Hernioplasty) Vs. Mbr (Anatomical Repair) With Reference To Duration Of Surgery, Postoperative Stay And Complications And Recurrence Rate For The Two Techniques.

However, This Technique Is Not Without Its Drawbacks. Chronic Groin Pain, Numbness And Ssis Continue To Plague Patients Following Meshplasty. The Former Can Be Attributed To The Greater Number Of Nerves Encountered During The Anterior Approach Used In The Lichtenstein Technique [2]. These Complications Are Magnified In Cases Of Bilateral And Recurrent Inguinal Hernias. The Difficult Anatomy Encountered In Cases Of Recurrent Hernias Raises The Need For Extensive And Complicated Dissection, Which Consequently Increase Rates Of Post-Operative Complications. This Highlights the Need to Consider Other Surgical Techniques When Faced With Bilateral or Recurrent Inguinal Hernias [2].

MATERIALS AND METHODS

Sample Size: 100 Cases.

Study Period: July 2006 to October 2007.

Selection Criteria

1. Cases In Which The External Oblique Aponeurosis And Transversalis Fascia Were Thin – Were Selected For Prolene Mesh Repair.
2. Cases In Which Transversalis Facisa Was Strong Were Selected For Shouldices Repair.
3. Remaining Cases Were Posted for Bassini's Repair.

AIMS AND OBJECTIVES

1. To Compare 100 Cases of Anatomical Repair (Shouldices and Bassini's Repair) Vs Prolene Mesh Repair.
2. To Study Duration of Operation and Hospital Stay.
3. To Study Postoperative Complications Of Hernia Repair Both Immediate And Late.

Inclusion Criteria

1. Patients Presenting With Inguinal Hernia.
2. Patients between 2yrs to 80 Yrs of Age.

Exclusion Criteria

1. Patients above 85 Yrs of Age.
2. Patients with Medical Comorbidities like Hypertension. Diabetes Melliyus, Malignancy, Liver Disorders and Cardiopulmonary Dyfuction.
3. Patients with Abdominal Wall Infections and Intra-Abdominal Pathologies.
4. Inability to Tolerate Spinal Anasthesia.

Bassini's Operation [3,4]

The Major Components of Bassini's 'Radical Cure' Are As Follows

1. Division of the External Obiique Aponeurosis over the Inguinal Canal through the External Ring.
2. Division Of The Cremaster Muscle Lengthwise Followed By Resection, So An Indirect Hernia Is Not Missed, While Simultaneously Exposing The Floor Of The Inguinal Canal To More Accurately Assess For A Direct Inguinal Hernia.
3. Division of the Floor or Posterior Wall of the Inguinal Canal for Its Full Length. This Ensures Adequate Examination Of The Femoral Ring From Above And Exposes The Tissue Layers That Will Be Used For Reconstructing The Inguinal Floor. By Doing This, The Surgeon Is Less Likely To Use The Transversalis Fascia Alone For Reconstruction, As It Is The Weakest Layer Of The Posterior Wall. This Step Was Largely Ignored When The Operation Was Imported To North America, And This Fact Has Been The Cause Of The Inferior Results With This Procedure.
4. High Ligation of an Indirect Sac.
5. Reconstruction Of The Posterior Wall By Suturing The Transversalis Fascia, The Transversus Abdominis Muscle, The Internal Oblique Muscle (Bassini's Famous 'Triple Layer') Medially To The Inguinal Ligament Laterally, And Possibly The Iliopubic Tract. This Step Is Suggested In Drawings, But Not Clarified In Original Texts Authored By Bassini.

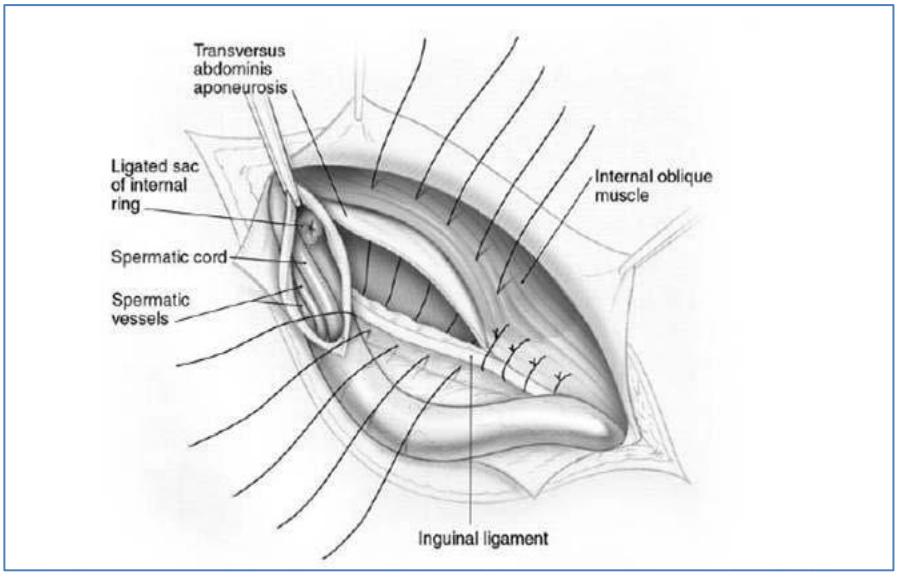

Fig-1: Bassini Repair

Shouldice Operation [5]

An Incision Is Made In The Transversalis Fascia From Internal Ring To The Pubic Tubercle Parallel To The Inguinal Ligament. And Flap Is Made.

Multilayer Repair Is Done. First Layer Of Repair Is Done By Suturing The Lower Lateral Flap With Deep Surface Of Upper Flap.

Repair Is Begun At Medial End With The First Suture Close To The Pubic Crest But Not Involving Periosteam. Laterally, Last Bite Medial To The Emerging Cord Creates New Internal Ring With The Underlying Transversalis Margin Below And Full Thickness Of The Upper Flap Above. Second Layer Of Repair Is Done With The Same Running Suture Is Used In The Reverse Direction To Create The Second Layer.

The Full Thickness Of The Upper Flap Of Transversalis Fascia Is Sutured To The Base Of The Lower Edge Of Transversalis Fascia. Sutures Should Be Placed About 2-4 Mm Apart And Bites Of Different Depth Taken.

Third Layer Strated With Passing Suture Through The Inguinal Ligament At The Medial Edge Of The New Internal Ring And Then Takes A Bite Of The Posterior Surface Of The Aponeurotic Tendon Of The Transverses Abdominis And Is Tied.

This Suture Is Continued Medially Upto The Pubic Tubercle And Returns Again Laterally To Suture The Anterior Sheath And The Lower Aspect Of The Conjoined Tendon From The Front To Inner Surface Of The Lower Flap Of The External Oblique Aponeurosis.

This Line Is Continued Back To The Internal Ring, Further Reinforceing Ring Around The Emergent Cord And Suture Is Tied To Its Original Tail. The Cord Is Now Laid On This Four Layer Buttress And The External Oblique Aponeurosis Closed In Front Of Cord In Double Layer.

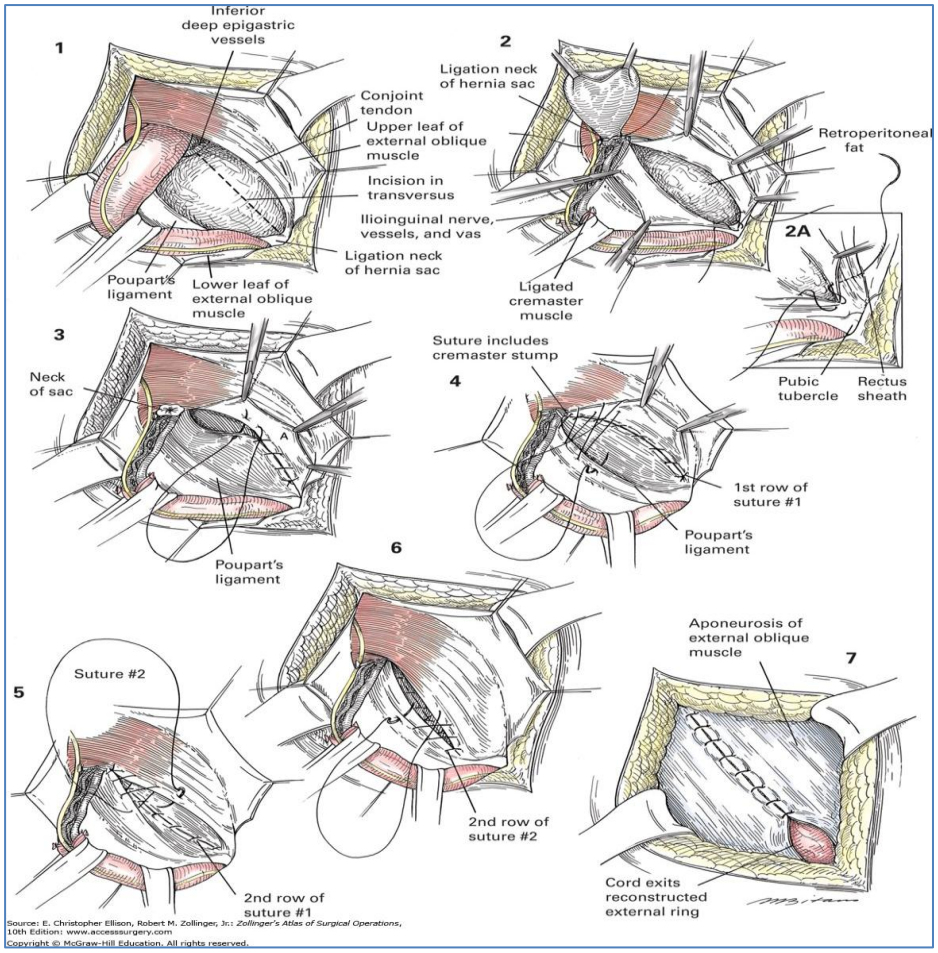

Fig-2: Shouldices Repair

RESULTS

Table-1 : Incidence of Different Types of Hernia (Total 100 Cases)

Age	Direct Hernia	Indirect Hernia	Pantaloon Hernia
0-5	-	5	-
5-10	-	-	-
10-15	-	-	-
15-20	-	2	-
20-25	-	2	-
25-30	1	4	-
30-35	-	6	-
35-40	4	19	-
40-45	3	9	-
45-50	4	6	1
50-55	13	4	-
55-60	8	3	-
>60	6	-	-
Total	39	60	1

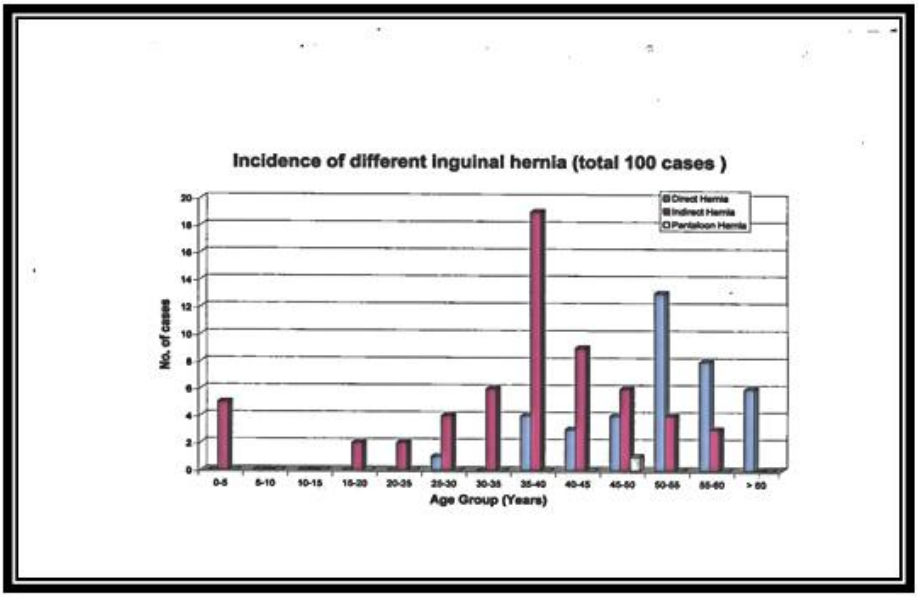

Fig-3: Incidence of Different Inguinal Hernias

Incidence of Direct Inguinal Hernia Is More in the Age Group of 45-60 Yrs. Incidence of Indriect Inguinal Hernia in the Age Group of 30-45 Yrs

Table-2: Sex Distribution

Sex	No. Of Patients	%
Male	99	99
Female	1	1

Shows Male Preponderance in Statistics

Table-3: Sex Distribution of Different Types of Hernia

Sex	Direct	Indirect	Pantaloon	Total
Male	39	59	1	99
Female	-	1	-	1

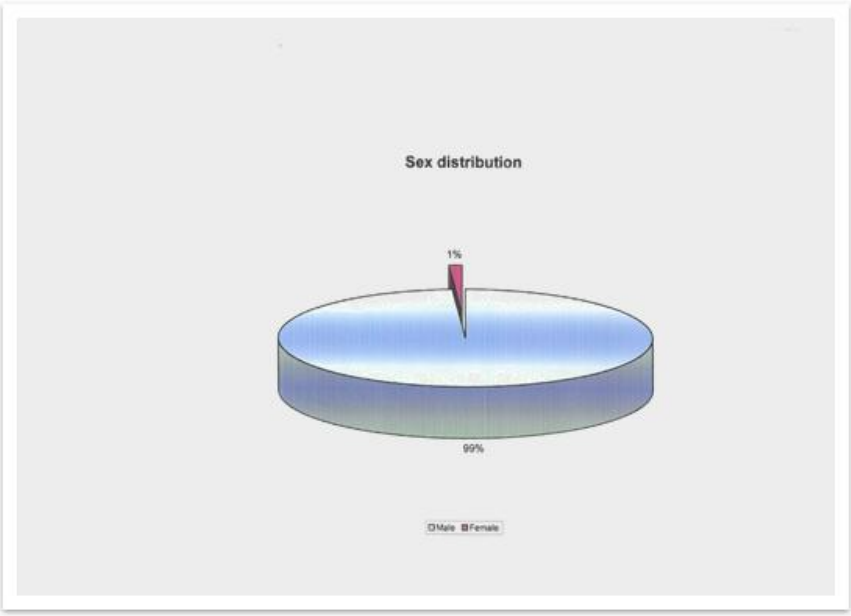

Fig-4: Gender Wise Distribution of Different Inguinal Hernias.

Table 4: Operative Procedure in 100 Patients

Complication	Prolene	Shouldice	Bassini's	Total
Post Op Distension	-	-	-	-
Wound Infection	1	-	-	1
Wound Seroma	4	2	3	9
Hemorrhage	-	-	-	-
Testicular Atrophy	-	-	-	-
Hydrocele	-	-	-	-
Retention Of Urine	4	2	2	8

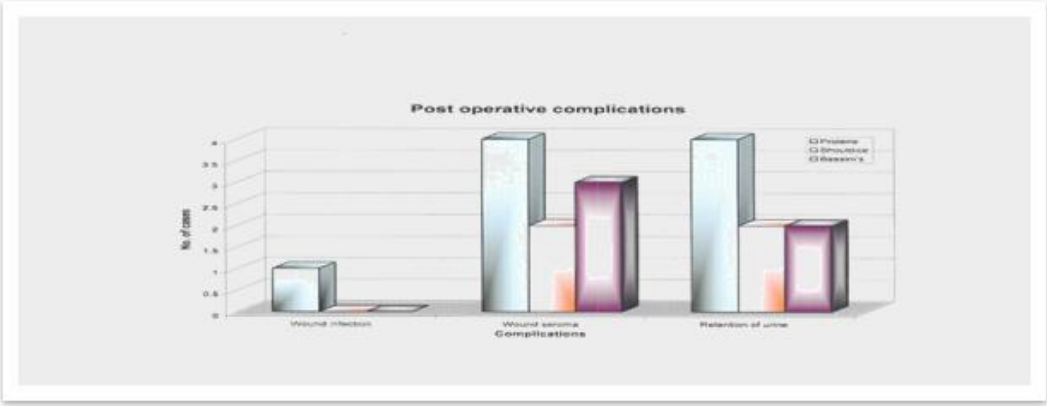

Fig-5: Graphical Representation of Postoperative Complications.

Table-5: Post-Operative Complications

Type Of Operation	Direct	Indirect	Pantaloon	Sliding
Prolene Mesh Repair	16	39	1	-
Sholdices Repair	10	02	-	-
Bassinis Repair	13	19	-	-

Table-6: Follow Up Symptoms

Symptoms	Prolene Mesh Repair	Shouldice Repair	Bassini's Repair
Persistant Pain	7	2	6
Chronic Sinus	-	-	-
Recurrence	-	-	-
No Complaints	49	10	26

Table-7: Duration of Operation, Hospital Stay and Expenditure

	Prolene Mesh Repair	Bassini's	Shouldice
Duration (Per. Min)	85	90	100
Hospital Stay (Days)	8	6	6
Expenditure (Rupees)	1200	700	600

DISCUSSION

Repair Of Hernia Is One Of The Commonest Surgery Performed In All Hospitals.Although There Are Many Variants Of The Standard Technique Changed Over The Last 100 Years.Conventional Bassini's Repair Relies Totally On Suture Line Between Conjoint Tendon And Inguinal Ligament.It Has Aslso Been Observed About 10% Hernia Surgeries Are Performed For Recurrent Inguinal Hernia Where Undue Tension On The Suture Line Of Already Weakened Tissue Is The Major Causative Factor For Recurrence[7,8].

Similarly There Is Enough Evidence That Hernia Can Be Caused By Disorders Of Collagen Synthesis And Lysis.If Such Weak Tissue Are For Repair Of Hernia Will Be Counterproductive And Hence Strengthening These Weak Tissues With Synthetic Mesh Is Most Desired Approach.

Various Type Of Synthetic Mesh Made Of Stainless Steel, Polyester Cloth,Nylon Cloth,Teflon Were Used In The Past And Recently Vicyrl With Prolene.However In 1962 Polypropylene Mesh Came Closest To Satisfy All Criteria For Ideal Mesh[9].

But The Only Important Drawback Of Prolene Mesh Is Its Exobitant Cost Which Is Almost Out Of Reach For The Poor Class Of The Patient.Keeping The Exobitant Cost Of Prolene Mesh In Mind We Did A Comparitive Study Between Anatomical (Bassini's And Shouldice Rpair) And Prolene Mesh Repair.

My Study Included 100 Patients of Inguinal Hernia in Which 56 Patients Underwent Prolene Mesh Repair, 32 Bassini's Repair and 12 Patients Underwent Shouldices Repair.

Majority Of My Patients Are In The Age Group Of 35-60 Yrs.The Youngest Patient Was 2 Yrs Old While Oldest Patient Was 70 Yrs Old.

Most Of The Hernias Were Of Indirect Type 60% Which Direct Hernia Was 39% And Pantaloon's Hernia 1% And Sliding Nil.Further Most Of The Hernia Were Right Sided (65%) While Left Sided Were (32%) And The Remaining Were Bilateral (3%)

Overall Sex Incidence Was 99% in Males And 1%. In Females.72% Of The Patients Were Manual Workers While 18% Household Workers And 5 % Were Sedentary Workers And 5% Were Unemployed.

60% Patients Were Having Montly Income Between Rs 500-1000 While 25% Were Earning Between Rs1000-3000 Per Konth And 5% Had No Income.

Efficacy And Safety Of Prolene Mesh Used For Repair Is Already Proved Beyond Doubt With Only Drawback Being Its Affordability For Poor Patients Due To Its Exorbitant Cost.In General Hospitals And In Hospitals Like Ours Where The Poor And Lower Middle Class Patients Come The Cost Of Prolene Mesh Is A Major Factor. In Our Study We Found That There Is No Significant Difference In The Outcomes Of The Patients With Rspect To Postoperative Complications Or Recurrence In Repair Done By Anatomical Repairs Or Prolene Mesh Repair.Thus If Properly Done In Selected Patients Bassini's Repair And Shouldices Repair Is As Good As Prolene Mesh Plasty If Not Better But At The Same Time With Less Cost[10].

CONCLUSION

1. Bassini's And Shouldices Repair Is Much Cheaper than Prolene Mesh Repair If Done Properly in Well Selected Patients.
2. If The Transversalis Fascia Is Very Thin And The External Obliquye Aponeurosis Is Also Thin And Worn Out So That The Fibres Of Underlying Muscle Can Be Seen Through The External Oblique Aponeurosis – The Prolene Mesh Repair Is The Best Procedure.
3. Presence Of Mesh Did Not Show Any Increase In Incidence Of Infection.
4. Patients Acceptance And Appreciation Of Procedure Is Gratifying.
5. Lesser Complications Like Pain And Infection Rate Can Be Brought Down By Observing Standard Aseptic And Sterilization Techniques Which Is A Nutshell Of Any Surgical Procedure There Fore Aseptic Precautions Are Manadatory.
6. Mesh Hernioplasty Is Also A Better Option For Young Aged Poatients.
7. Early Ambulation Should Be Encouraged.
8. Meticulous Dissection, Gentle Handling of Tissue Are Necessary For Better Results.

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