Choosing the therapy of Incisional hernia through non vertical incisions

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Abstract:

The events of incisional hernia differ from 5 % to 13.9 % in those patients who have gone through abdominal operations. The exact percentage of occurring hernia through non-vertical incision is unknown so far but in the patients who are suffering from Trans parietal incision it's approximately 10% only. **The aim** of this scientific research is to choose the therapy of Incisional Hernia in the non-vertical incision of the abdominal wall. This scientific research has started and ended in the period of 2 years, conducted from 3/7/1395 to 5/5/1397 in the surgical wards/branches of the Nangarhar medical faculty's. **Material and methods** 20 male and female have been kept under study that aged from 21 up to 65 years old and caught up of incisional hernia through non-vertical incision. **At the result** All the patients have been followed up at least for 18 months (from 6 months to 18 months) after surgical operations. Seroma occurred for 3 (15 %) patients out of 20 and 1 (5 %) patient who had sugar disease and mesh is good for the repair of large defect.

Key. Words: Incisional Hernia, Monofilament nylon, Merselene mesh, Nonvertical incision.

Introduction

Incisional hernia has followed abdominal surgery like a shadow for more than a century now. Incisional hernia is the one true iatrogenic hernia. Ian Arid defines incisional hernia as a diffuse extrusion of peritoneum and abdominal contents through a weak scar of an operation or accidental wound. Incisional hernia occurs in 10- 20 % of patients subjected to abdominal operations· Many factors are associated with incisional hernia like age, sex, obesity, chest infections, type of suture material used and most important wound infection1. All these present a challenging problem to the surgeon (1). Incisional hernia (IH) represent a breakdown or loss of continuity of a fascia closure. IH occur in 11-23% of laparotomies. It enlarges over time and can give rise to such complications as pain, discomfort, bowel obstruction, incarceration and strangulation. Furthermore, IHs reduce the quality-of-life and the chances of employment. Prolonged pressure and stretch on skin leads to skin problems such as attenuated skin, depigmentation or hypopigmentation of the skin, ulceration and infection (6). The introduction of prosthetic mesh revolutionized the treatment of groin hernia but, to date, has had little impact on the treatment of incisional hernia. The risk factors for the development of incisional hernia include obesity, diabetes, emergency surgery, postoperative wound dehiscence, smoking and postoperative wound infection. The risks of repairing an incisional hernia which should be explained to the patient when obtaining consent include Seroma formation, wound infection, injury to intra-abdominal structures and recurrence. Major (7). Incisional hernia is defined as an abdominal wall defect at the site of abdominal wall closure and more than 10% of patients, who undergo laparotomy, experience the hernia.1,2 It is estimated the number of incisional hernia repair cases would reach 90,000 in

USA, 41,000 in Germany3 and 2,150 in Korea per year. Approximately 50% of incisional hernia develop or present within the 2 years following surgery, and 74% occur within 3 years.4,5 Ventral hernias is a bulge of tissues through an opening of weakness within abdominal wall muscles with-out surgery (8). incisional hernia is a result of failure of lines of closure of abdominal wall following surgery. Wound infection and wound dehiscence's are the most serious catastrophe that can follow abdominal operations and incisional hernia may develop within months or few years after surgery. Postoperative ventral abdominal wall hernias more commonly occur in infraumbilical midline incisions than those above the umbilicus. The reported incidence of incisional hernia varies Widely between 0.5% to 13.9% Of patients undergoing abdominal operations Although exact incidence of incisional hernia through nonvertical incisions has not been reported but approximately 1% of all trans parietal abdominal incisions result in incisional hernia. Incidence can be further reduced by the use of monofilament sutures eg nylon, polyamide, polypropylene and by using mass closure technique. where nonvertical incision is used. This includes hernias following grid iron incision after appendectomy. subcostal incision in cholecystectomy or splenectomy, parastomal hernia after colostomy closure, hernia through suture holes or drain holes, laparoscopic ports, hernia in lumbar incisions following nephrectomy or lumbar Sympathectomy and through pfannesteil incision in hysterectomy and caesarian section. Incisional hernia through nonvertical incisions is more likely to become obstructed, incarcerated or strangulated and may even endanger patient's life by causing skin necrosis and perforation, if left untreated. Incisional hernia has a recurrence rate of 9% to 25% (31 and majority of these failures are due to wound complications such as Seroma and wound infection [4,51 and other factors that put strain on suture line eg obesity, abdominal distension, violent cough and vomiting [6]. Successful repair of giant incisional hernia can be achieved by using prosthesis eg prolene mesh, Merselene mesh and by modifying the anatomical technique[7]. Although uncommon, incisional hernia may occur after operations Studies have shown that transverse incisions are associated with a reduced incidence of incisional hernia compared to midline vertical laparotomies (12). If in surgical operations drain is placed or stoma is created incisional hernia occurs. The treatments of incisional hernia are as following.

Anatomical Repair: In this operation, all anatomical segments like peritoneum, rectus sheet, linae Alba, and subcutaneous tissues are separated and layer by layer are sewed through non absorbable suture material (8). Mesh Repair: Most of the incisional hernia which has large defect and disadvantage are seen and happened in fat women. It is the best way to repair it with mesh. In this process hernial sac opens up and the contents refer to the abdomen and mesh is placed over the peritoneum and the surrounding tissues are repaired without any pressure through non absorbable suture and are coated with rectus muscles (8). Keel Operation: In this process the hernial sac dissected and is pushed into the abdomen without opening the sac and is repaired with inverting suture it means that when needle is entered through peritoneum and peritoneum is tied and sewed with non-absorbable suture and this method is no longer usable (8).

The subcostal incision which is done for cholecystectomy there is high possibility of incisional hernia's occurrence because eighth, ninth and tenth inter costal nerves are destroyed. The gridiron incision which is done for appendectomy destroys ilioinguinal nerves In this study after cholecystectomy hernia occurs due to the mis-repair of the deepest wild part of the incision. In colostomy and appendectomy hernia occurs due the spoiling of the ulcers. Fatness is the common factor in patients. In fatness hernia belongs to the classifications of the ulcers and their boldness also it occurs due to greater Omentum and mesentery because of higher pressure in internal part. There is huge possibility of

strangulation, obstruction and incarceration in incisional hernia and even can be cause of skin's perforation. All these integrations can face one's life with danger. During the period of time in which hernia occurs after operation it differs from now up to 2 years. After the very first repairing there is 9 % to 25 % chance of reoccurrence of the incisional hernia (1).

The risk factors of the hernia are listed as following:

Patient related factors

Age: More than 60 years

Gender: Male

Obesity: BMI >25 kg/m2

Co-morbidities: Diabetes mellitus, chronic lung diseases, obstructive jaundice. Immunosuppression in organ transplant patients, chemotherapy and steroid therapy

Surgery related factors

Emergency operations, bowel surgery, abdominal aortic aneurism, stoma closure, operations for peritonitis, re-laparotomy technique and suture material used for closure of the abdominal incisions Wound infection, long operating time, increased blood loss, surgeon experience

Biological factors

Collagen and metalloproteinase synthesis Smoking, Nutritional deficiencies (6).

Methodology:

This research is conducted in Nangarhar medical faculty and Nangarhar public health hospital's surgery wards which is started in 3/7/1395 and ended in 5/5/1397. The research is designed as an analytical study.

Inclusion: In this research all male and female patients whose ages were from 21 years old to 56 years old and were caught up of incisional hernia were charged in hospitals under treatment. They were doubtful for the swelling and uneasiness in painful area. The patients who had big hernia along with small hernia circles were also involved in this research. In those patients where there was danger of strangulation or had non-elastic hernia and its obstruction's history were participating and they were referring respectively during a particular period of time for the purpose of treatment to the surgical wards of our hospitals.

Exclusion Criteria: All those patients who were over-weighted, had problems of skin, had ascites and those who were suffering from big incisional hernial defect weren't involved in this research. In this research 20 patients who had incisional hernia participated, among all of them 15 (75 %) male patients and 5 (25 %) female patients took part. We took or collected the entire history of each patient and all of them have been observed according to the clinic in order to find out the range of shortcomings. We noted down the symptoms and conducted physical examinations/tests and then placed in prepared questionnaire accordingly. We advised the needed test to each patient and then did those tests too. The overall observation and assessment are as following. Complete blood tests, functional tests of kidneys (R.F.T) , electro- cardio - graphy of heart (E.C.G) , blood serum bilirubin , SGPT, Urea, blood glucose, ALP, B.U.N, X-ray of chest, ultrasound of abdomen and urinalysis and from all of these above-mentioned patients written agreements have been collected. Before surgical

operations according to the standardized protocol 500 Mg metronidazole and 1.5 g saftriaxson through intra vinos (IV) have been started 12 hours ago. For 14 patients anatomical repair was conducted and in 6 of others patients due to big problems mesh repair was done. Proline mesh was done with the technique of inlay and on-lay. Inlay: It's almost the same as mesh problem but cut a bit larger and under abdomen wall and muscles muscular aponeurotic problem repair wad done. On-lay: A part of mesh muscular aponeurotic problem and under-skin tissue or with skin was sutured. All of the patients were discharged from hospitals after removing the sutures and were under observations or follow-ups in OPD ward.

Findings

In this research 20 patients of incisional hernia were involved who were both male and female and were aged from 21 to 56 years old. Mostly this hernia is type II and exists in the wild part of the incision. In 80 % of the patients' incisional hernia was found after a year while in rest of the others patient's incisional hernia was found right after 2-4 years' operations. In 6 of the patient's problems was repaired with artificial material but in other 16 patients it was repaired through anatomical repair.

The classification of patients, incision and surgical techniques are mentioned in following table.

NO	Incision	Surgery	Number of patient	Time interval(In year)
1	Kocher's	Cholecystectomy	7 patients	<1
2	Grid Iron	Appendectomy	2 patients	<1
3	Stomal	Cholecystectomy	1 patient	1.2
4	Pfannesteil	Hysterectomy	3 patients	2
5	Transverse	Mayo repair	3 patients	<1
6	Lumbar	Nephrectomy	3 patients	2
7	Rooftop	Hepato-jejunostomy	1 patient	1.2

All those factors that have been thought and considered that caused incisional hernia are placed in second table.

NO	Factors of Danger	Number of patients
1	Fatness	12 patients
2	Problem of Ulcer	6 patients
3	Emergency surgery	5 patients
4	COPD	2 patients
5	Diabetes	4 patients
6	Reoccurrence	1 patient

Third table indicates the clinical condition of the patients:

No	Symptoms	Percentage
1	Swelling along the incision (entirely or partially)	Entire 60 %, partial 40 %
2	Pain	90 %
3	Blockage of sub-acute intestine	20 %
4	Strangulation	0%
5	Cough Impulse	100 %

6	Elastic hernia (Entire or partial)	Entire 70 %, partial 30 %
7	Sensible Problem	80 %

Fourth Table: Surgical operations and findings indicate:

NO	Surgical Findings		Number of Patients
1	Range of problem	4-6 CM	6 patients
		6-8 CM	3 patients
		8-10 CM	3 Patients
		10 CM <	2 patients
2	Size/Range	One segment	10 Patients
		Multi segments	4 patients
3	Contents	Large intestines	4 patients
		Small intestines	6 patients
		Epiploic/Omentum	4 patients

A very well recovery of patients have been done, in two of the patients for whom mesh wasn't used with the follow-up earlier operation that cholecystectomy was conducted incisional hernia occurred. The repair wad done through inlay and on-lay technique. All of the patients were followed after surgery for a year (6 to 24 hours). Among 20 patients 3 (15 %) patients had Seroma and 1 (5 %) patient had the sugar disease and six months later first operation surgery was occurred and incisional hernia occurred too. None of the patients complained regarding artificial mesh and sutures and nobody had complaints about the removal of the sutures.

Discussion:

If we compare the results of our research with the results of the research that was conducted in C/O 56 Military hospital 172 from February 94 to February 99 in 15 patients who have been caught up of incisional hernia due to non-vertical incision so there isn't so much difference between both of them. In our research, 20 patients have been caught up of incisional hernia through non-vertical incision, 3 (15 %) were caught up of Seroma, 2 (10%) patients faced with reoccurrence of incisional hernia due to the lack of implementation of mesh and 1 (5%) patient who had sugar disease and mesh wasn't implemented also caught up of incisional hernia again while in the research of C/O 56 Military hospital 172 1 (6.66%) patient didn't go through mesh but went through cholecystectomy after previous operation and caught up of incisional hernia again, among 15 patients 2 (13.33 %) patients faced up with Seroma and 1 (6.66 %) who had sugar disease went through surgery after the operation six months later and caught up of incisional hernia again. By the way, for the better recovery of ulcer selecting one of the options of incision matters a lot. It's so clear to all that one

transverse incision as compared to non-vertical incision 3 to 5 times better have chances to be cured without hernia. One of the advantages of the transverse incision is that it occurs equally and in a parallel way with fiber muscles. In abdominal problems such as coughing, forcing and with turning of guts get close to the sides but get pushed with the non-vertical incision. After operation most of the hernias occur with their own tissues and usual surgeries but while suturing the more pressure comes over the sides so reoccurrences happens more. In addition to surgical technique suturing plays vital role as well. Pressure must be avoided mostly while suturing. Pressure destroys micro-circulation and the oxygenation of the tissues. The normal turning of collagen fiber and polymerization don't happen and scar happens untidily. However, incisional hernia is unusual in non-vertical incision but due to the repair of wrong technique, usage of drain, fatness and sugar disease hernia can occur. It is possible to prevent it through transverse incision, aseptic technique, proper hem stage, fast slaughter, careful repair of deeper parts, and repair through non-charming monofilament materials, under-weightiness and sugar disease control.

Conclusion:

As a result of the research it seems that Marceline mesh is one of the best and helper tools for body's tissues. Large hernia gets easier to be technically repaired with the usage of mesh and the deep abdominal part and if the specialist is sure enough that along with mesh repair suction drain is used it plays great role in the avoidance of the operation.

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