

## INGUINAL HERNIA REPAIR IN THE 21<sup>ST</sup> CENTURY

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**INGUINAL HERNIA REPAIR IN THE 21<sup>ST</sup> CENTURY (Abstract):** In the nineteenth century, Bassini pioneered inguinal hernia repair and to this day many hernias are still repaired with similar sutured methods. The recurrence rate of these is seriously high – up to 20% and long-term pain is common. Time and technology have moved on, but many surgeons have not. In the twenty first century, recurrence of less than 1% is attainable, with almost no significant pain. It is already over-time for change.

KEY WORDS: INGUINAL HERNIA, LAPAROSCOPIC HERNIA REPAIR; TAPP

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### HISTORY

The treatment of inguinal hernia is evident in history from ancient times. For centuries it was extremely limited by the deficiencies in treatment options because of pain. It was not until the nineteenth century that the introduction of general anaesthesia made real anatomical procedures possible. This gave Bassini the opportunity to make his international name in 1887. His eponymous procedure was subsequently modified and developed by many others on both sides of the Atlantic and right across Europe. Interestingly, the Shouldice operation, hailed as the best cure for many years, is technically very similar to Bassini's original description.

Improvement in repair materials also proceeded during the twentieth century. Silk had been preferred early on, but is liable to infection and loses its strength quickly. Kangaroo tendon, stainless steel wire and fascia lata (Gallie graft) all came and went. Monofilament nylon came into common use in the 1970s – producing less infection and less initial recurrence, but it loses its strength after 2-3 years. This was improved on by the introduction of polypropylene by Natti in 1963, but not seriously taken up for many years.

The importance of tissue tension became recognised at about this time. Pulling the repair together by sutures produces pain (worsened by postoperative oedema) and also ischaemia. This added to the pain and also contributed to repair failure. Lichtenstein (1987) [1] showed that “tension-free” repair using mesh, produced less pain and much better recurrence rates. However, the results of all anterior approaches tends to produce long-term wound discomfort. Why should this be so? To gain access to the anatomical defect, it is necessary to violate the anatomy of the anterior abdominal wall. Injury to the cutaneous nerves is very common. Temporary damage is almost universal. This is further increased by the necessary repair of the entry wound.

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### A NEW APPROACH

Rives (1974) and Stoppa (1981) advocated a posterior approach to the repair, which was tension free, but required a low laparotomy for access. Postoperative wound pain was still a problem, but the cutaneous groin nerves were not injured. Interestingly, this preperitoneal approach was not new. Dimitrie Cantemir had described it in 1716, from observation of Albanian surgeons, though an actual repair was not performed by them.

Several preperitoneal devices have been used in the last 15 years. The Kugel plug and other patch/plug prostheses are introduced by an anterior approach. They all have the disadvantages of this access route. They all do not thoroughly cover the myopectineal orifice of Fruchaud and must therefore be regarded as potentially deficient.

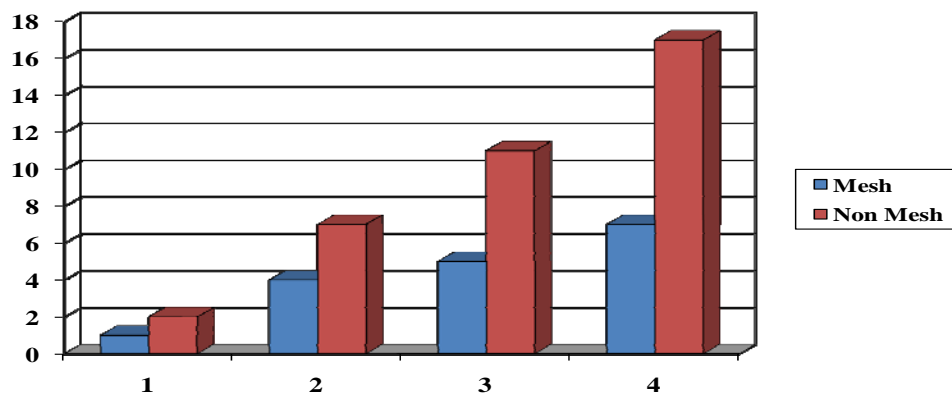


Fig. 1 Cumulative recurrence rate

### LAPAROSCOPY

The Stoppa procedure was not commonly used, due to its difficult access, but the repair concept was logically and mechanically sound – the intra-abdominal pressure actually holds the mesh in place, rather than tending to push it off, as in the Lichtenstein procedure, particularly medially. Arregui was the first to propose an anatomical laparoscopic transabdominal preperitoneal repair (TAPP) in 1992 [2].

There were some early problems with the recognition of unfamiliar anatomy and no defined methodology. Postoperative pain, due to intra-abdominal nerve injury by staples fixing the mesh was also recognised. The outcomes however, were “at least as good” as open repair (EU Hernia Trialists, 2000) and quickly became better.

### RESULTS

Most surgeons have no idea of their hernia results! They never look. It is common to assume that they are “good”, but it is rare for anybody to study what actually happens. One of the good outcomes of the advent of laparoscopic surgery was that many people wanted to assess results of the new technology and thus had also to study older methods.

Multicentre trials and meta-analyses have many weaknesses, but in the 1990s, they did start to give indices to examine and question. Of primary importance in hernia repair are recurrence rate and the incidence of long-term symptoms (Fig. 1). The

cumulative recurrence rate of sutured and open mesh repairs both get worse with time and then stabilise.

The results for open sutured „Bassini” type repairs the results are alarmingly bad. (Table I); 15% recurrence was common, but up to 20% was reported. The Lichtenstein recurrence rates were much better, but pain and discomfort were still not good.

**Table I Comparative recurrence (percents)**

Sutured	Lichtenstein	Other laparoscopic	Stafford
< 20	4 - 8	1	0.6

**Table II Long-term results (percents)**

	Sutured	Lichtenstein	Other laparoscopic	Stafford
Discomfort	15 - 53	19	2 - 14	16
Pain	9 - 14	4.5 - 9	NA	0.3
Disability	5	3	NA	0

NA – Not Available

For laparoscopy, the recurrence was similar, but pain much better (Table II). That was in the early days. Since then, there have been good studies on large groups of patients [3,4].

Our Stafford study examined the results of 1,950 repairs beginning in 1992. This was a prospective series, later followed up by questionnaire. Two groups were studied, the first 629 hernias, which clearly showed a Learning Curve for both operating time and also for recurrence. The second series of 945 was much later, when the technique and outcomes had stabilised. It has shown a recurrence of only 0.6% and a long-term discomfort rate of 1.9%. These results already contain many patients who had repairs done 5-9 years before. None of these patients had limitation of normal activities. There were no cases of severe pain. “Pain” and “discomfort” are very subjective terms. The more objective approach is to see whether they interfere with normal life.

### **OTHER BENEFITS**

One of the benefits unique to the laparoscopic approach, is the facility to check the contralateral anatomy. Rather surprisingly, this showed an incidence of 28.7% of unanticipated extra hernias. In addition, both ipsilateral and contralateral femoral hernias were found in 10.8%. These can all be repaired at the same operation, saving the patient a further procedure and period of convalescence.

Laparoscopy thus provides cost benefits, certainly in Britain. When the total cost of a series of patients is examined in detail and in a two year timeframe, it is definitely cheaper, in spite of the use of some disposable devices. This is true of hospital costs alone, but may be different in other countries. Patient loss of work and time at

home is an extra saving. Though this is very difficult to quantify, it is certainly important to the patient and his family.

### **PATIENT SELECTION**

So, are all patients best treated laparoscopically? No. Emergency presentation, particularly if obstructed, is best treated open. There is no intraperitoneal space for laparoscopy and if bowel resection is needed this is not a feasible approach. Also, very large inguino-scrotal hernias are laborious, time-consuming and likely to get a scrotal haematoma.

Most of the smaller, elective hernias are best treated laparoscopically, by trained surgeons . This training is now widely available, but not all surgeons are laparoscopists.

If this cannot be done, a Lichtenstein repair is by far the best alternative approach and is quite easy to learn. This obviously means accepting the disadvantages of the anterior approach.

In the 21st century there is no place for sutured repair for elective hernias.

### **TWO BASIC NEEDS**

1.Objective assessment – Failure to do this is a basic sin of most surgeons past and present, regardless of the method we use. Many surgeons are doing their patients a dis-service by using inferior methods without even knowing it. Looking at results critically will produce a change in practice – for the better. Not to do so is unethical.

2.Long-term follow up - Laparoscopic hernia repair has only been with us for 17 years. 10 year outcomes should now be assessed. Individual surgeons with large series should consider review and publication. This will provide a baseline for others to compare their outcomes. The Stafford series has some known 5-9 year results, but is about to be reviewed to produce 10 year figures for 774 repairs.

### **WHERE ARE WE NOW?**

Sutured repair is still widely performed, with poor but unrecognised results. It should stop.

Mesh repair in some form is now the norm, but where to put it is the present argument. The results for most patients are best with laparoscopy, but there are not very many people doing it. Why?!

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