CHAPTER 12

Valorisation
INTRODUCTION

Inguinal hernia repair is a very frequently performed procedure in general surgery, with approximately 20 million repairs every year worldwide. In the Netherlands, over 28,000 adult patients underwent inguinal hernia repair in 2010, accounting for 17 operations per 10,000 inhabitants. It is estimated that some 2-6% of the inguinal hernia repairs result in severe groin pain leading to significant impairment in social and daily activities. As a consequence, yearly up to 2,000 Dutch patients will be confronted with chronic postoperative inguinal pain (CPIP) in the Netherlands. As chronic inguinal pain can also develop after other surgical therapies including caesarean sections (28,644 in the Netherlands in 2010), this number of new onset inguinal pain patients is probably an underestimation.

There is no consensus on the optimal treatment strategy for CPIP. This uncertainty is also reflected in the contents of the international guidelines on hernia surgery, as robust recommendations are not provided. Prevention and treatment of inguinal pain clearly needs more scientific evidence. Although remedial surgeries should be performed in specialised centres by experienced and well trained surgeons, there is a necessity for more evidence-based practical guidelines in order to evaluate the safety and efficacy of these interventions. In my opinion it is appropriate to explore remedial surgery options in an earlier phase in the treatment algorithm of CPIP, as a longer delay could cause protracted periods of postherniorrhaphy pain. This is even more true as the phenomenon of ‘window of opportunity’ may apply in these patients. Surely, once central sensitization occurs, peripherally oriented therapies are probably to no avail.

SOCIAL RELEVANCE

In the present era of evidence-based medicine, more pain research is performed than ever before. Nevertheless, knowledge regarding determinants, pathogenesis, prevention, treatment and prognosis of pain is still incomplete. CPIP is a obstinate entity that is particularly difficult for patients to accept because of its iatrogenic aetiology. This is even more true as a substantial portion of patients was never counselled on the risk of CPIP prior to surgery. They are often not taken seriously enough by their surgeons who
performed the index hernia surgery, especially when a relative ‘simple’ surgical procedure as inguinal hernia repair was performed. Unfortunately, the level of general knowledge of (hernia) surgeons regarding CPIP is suboptimal. Moreover, misconceptions proclaimed by the patient’s environment (e.g. family, colleagues, employers) largely contribute to the misery and ignorance these CPIP patients feel.

Acceptance of the phenomenon of CPIP would have been much easier if a biologic substrate underlying CPIP was identified. The present thesis has identified several anatomic substrates explaining inguinal pain (chapter 4, 5, 6, 7, case I, II). These examples may help (surgical) specialists in referring a patient to specialized centres for evaluation and possibly remedial treatment once conservative stratagems are to no avail. Studies from this thesis may also guide these other (para)medics confronted with a CPIP patient. Moreover, a multidisciplinary approach including pain specialists and hernia surgeons is required for a proper advice regarding diagnostic and therapeutic approach of a CPIP patients.

SOCIETAL IMPACT

In the era of the well-informed patient with access to the world wide web, patients are more aware of the phenomenon of mesh-related CPIP. The use of meshes for inguinal hernia repair is currently subject to increasing criticism including massive suing of large pharmaceutical companies. In 2016 and 2017, a Dutch consumers television programme, called ‘RADAR’, dedicated several episodes to the use of prosthetic meshes in inguinal hernia repair. They criticised the use of meshes and highlighted cases of CPIP patients. In reaction to this negative publicity, the Dutch Surgical Society (Nederlandse Vereniging voor Heelkunde, NVvH) has stated a clear and uniform opinion on the use of prosthetic materials in inguinal hernia repair: It is not ideal, but it is the best solution we have at present.

It must be appreciated that the overwhelming majority of hernia patients will never develop CPIP. One could question whether a tension repair (using the body’s own material for closing the defect) has any role nowadays instead of a mesh-based technique. Before introduction of the prosthetic mesh, these procedures were considered standard but recurrences were quite common. Furthermore, a tension repair is associated with an
increased chance on CPIP as compared to mesh-based repairs. Hence these techniques are not recommended in current international guidelines. Is the patients’ reluctance to mesh-based repair justified? As claimed by NVvH, unfortunately, there is no better method at this moment in time.

As reported earlier, up to 6% of the hernia repairs result in significant restrictions during daily activities. This number was estimated some years ago and was therefore mainly based on open repairs. With the increasing use of endoscopic hernia repair techniques, it is likely that the actual number will nowadays be lower. Since the present thesis has introduced and investigated feasible, safe and effective surgical treatments for CPIP, patients may be reassured in the knowledge that successful remedial surgery is possible.

**ECONOMICAL RELEVANCE**

A diversity of treatment strategies for CPIP will likely lead to savings in health care costs. Chapter 2 and chapter 3 showed that the (more expensive) self-gripping mesh is not superior regarding pain relief or hernia recurrence rates after three years of follow-up as compared to the conventional sutured meshes in open inguinal hernia repair. By using only conventional meshes for primary open repair, money might be spared.

Previous research on the cost-effectiveness of remedial surgery (i.e. neurectomy) found that a successful neurectomy reduced compensational costs up to €29,000 per patient a year in the Netherlands and was therefore considered cost-effective. That study assumed a 50% reduction of occupational disability after a successful neurectomy. No other literature is available on the work resumption after meshectomy. It is expected that an open or laparoscopic mesh removal (chapter 4, 5) will have similar or even higher cost reductions as success rates varied from 50-100% in our literature review (chapter 4). Therefore, implementation of the present results may have substantial financial consequences. Furthermore, improved success rates in selected subgroups of patients (chapter 6) combined with the preferential use of spinal anaesthesia (chapter 7, 8) may lead to a more beneficial cost-effectiveness of remedial surgeries for CPIP.

The SPINASIA trial (chapter 8) aims to determine patient-related outcome measures and costs. These analyses not only pertain to direct costs but also involve the costs
RELEVANCE IN THE MEDICAL FIELD

Mesh removal recommendations for physicians who are specialised in hernia treatment were proposed in chapter 4. A clear list of specifics facilitating selection of appropriate patients potentially benefitting from meshectomy will likely influence remedial surgery success rates leading to an increased number of patients referred for mesh removal. In 2014, a consensus-based algorithm for CPIP was published11. In chapter 4 this algorithm was discussed and some modifications were suggested, as based on the findings of the present thesis. Whether imaging including Magnetic Resonance Imaging (MRI) aids in determining whether remedial surgery is required, is highly questionable. If a meshoma is suspected, the present algorithm advises consultation of a pain team and only suggests a meshectomy if pain is refractory to conservative management11. In chapter 6 and chapter 7, it was demonstrated that the presence and subsequent removal of a meshoma were significantly associated with a successful outcome. Therefore, it is suggested to operate on a meshoma when identified.

Surgical therapies for CPIP are often considered a final option once all conservative treatments were to no avail. An unnecessary delay in referral and subsequent adequate therapy may lead to a limited chance on recovery. Thus, it is debatable whether remedial surgery deserves a place higher up in the algorithm of CPIP patients. Our research team has participated in the working group for the latest international guidelines for groin hernia management. This thesis definitely contributes to a broader scientific basis for management of CPIP and results may be included in the upcoming update.

Caution is warranted when interpreting the results of studies using recalled pain scores. Recall bias may lead to an underestimation of the treatment effect when success rates exceed 67% (chapter 9). Conversely, effect sizes are overestimated when success rates are below 67%. These findings should help medical professionals to critically evaluate conclusions of studies. Furthermore, it is suggested to use less detailed pain scores in future research, since more comprehensive scales seem to be more susceptible for recall errors (chapter 9).
REFERENCES