



Chronic Post-Inguinal Herniorrhaphy Pain in a Setting in Rural Africa

Richard Wismayer^{1,2*}

¹*Department of Surgery, St. Joseph's Maracha Hospital, Maracha, West Nile, Uganda.*

²*Department of Surgery, Habib Medical School, IUIU University, Kampala, Uganda.*

Author's contributions

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/JAMMR/2021/v33i1631001

Editor(s):

(1) Sevgul Donmez, Mugla Sitki Kocman University, Turkey.

Reviewers:

(1) Swapan Das, West Bengal University of Health Sciences, India.

(2) Parthasarathi Hota, Sai Tirupati University, India

Complete Peer review History: <https://www.sdiarticle4.com/review-history/71566>

Original Research Article

Received 08 May 2021

Accepted 13 July 2021

Published 14 July 2021

ABSTRACT

Introduction: In Africa, inguinal hernia is a common surgical condition with an incidence of 175 inguinal hernias per 100,000 people each year. Pain that persists for at least a duration of 3 months postoperatively following repair of an inguinal hernia defines chronic groin pain. The objective of this study was to determine the prevalence of chronic groin pain in a group of patients in a hospital setting in rural Africa.

Methodology: A descriptive retrospective study was carried out between 1st April 2008 to the 31st July 2012 on all patients ≥ 15 years of age that underwent an inguinal hernia repair were eligible in this study. Data was retrieved from patients' clinical notes and theatre log books on age, sex, recurrence of hernia and post-operative pain lasting at least 3 months. Data obtained in the interview questionnaire included duration of pain, pain at the operation site, type of postoperative analgesia and a physical examination to determine recurrence was performed in the surgical-out-patients clinic.

Results: One hundred and fifty eight patients following repair of inguinal hernia using the modified Bassini technique were analysed. Mean age was 44.84 years. The male:female ratio was 3.65:1 with a male predominance. Chronic groin pain/discomfort was reported in 22(13.92%) and this pain/discomfort lasted for at least 3 months post-operatively.

Conclusions: The low incidence of chronic groin pain in our study may be due to the majority of them being operated as elective procedures under local anaesthesia with routine identification of

*Corresponding author: E-mail: richardwismayer@rcsi.ie;

the ilioinguinal nerve. However, a study with a larger sample size and a longer follow up may be required to ascertain the true prevalence of chronic groin pain following inguinal hernia surgery in rural Africa.

Keywords: Inguinal hernia; chronic groin pain; post-operative; rural; Africa.

1. INTRODUCTION

In Africa, inguinal hernia is a particularly common surgical condition [1-4]. An incidence of 175 inguinal hernias per 100,000 people each year has been observed in Africa [1,5]. Following the repair of an inguinal hernia, the pain that persists for at least a duration of 3 months postoperatively defines chronic postsurgical groin pain. However, pain from other conditions preceding surgery need to be excluded [6,7].

Chronic groin pain is a potentially incapacitating complication, presenting a therapeutic and diagnostic challenge to the surgeon [8,9]. The aetiology of chronic groin pain is complex and multifactorial including somatic, nonneuropathic and visceral pain [10]. Direct damage to the inguinal nerves, which affects the somatosensory system results in neuropathic pain postoperatively [7,11,12]. Neuropathic pain which arises in patients postherniorrhaphy and did not have preceding groin pain preoperatively or if they had pain which differed postoperatively defines chronic postherniorrhaphy pain. The cause of this chronic postherniorrhaphy groin pain may be due to entrapment of the genital branch of the genitofemoral nerve, ilioinguinal or iliohypogastric nerves either in mesh, scar tissue or sutures [13-15].

Due to diversity of pain assessment methods, multiplicity of surgical procedures (mesh versus non-mesh repair and laparoscopic versus open repair) and the non-standardisation of the follow-up period post-operatively, the incidence of chronic groin pain has varied. The prevalence of neuropathic pain has been found to be 31% in patients presenting with persistent pain postoperatively after an inguinal hernia repair [16].

Postoperative chronic groin pain may be due to a number of factors related to the surgeon's experience and method of repair used, whilst patient factors include BMI, age and gender [17,18]. The objective of this study was to determine the prevalence of chronic groin pain in a group of patients at a hospital in a setting in rural Africa.

2. METHODOLOGY

A descriptive retrospective study was carried out at St. Joseph's Maracha Hospital which is a 204 bed capacity Missionary Hospital with an attendance of 16,626 outpatients and 6,145 patients annually. All patients over a 52 month period between the 1st April 2008 to the 31st July 2012 that had undergone an inguinal hernia repair were eligible in this study. All patients were consented for a modified Bassini repair as part of the routine standard clinical management in the hospital. Over this period no mesh repairs or other types of repair were performed.

The data was collected using a pretested questionnaire on the following variables: age, sex, recurrence of hernia and post-operative pain lasting for at least 3 months [19]. The clinical notes and theatre log books were used to retrieve data of all the patients that had undergone an inguinal hernia repair. A mobile call was used to contact patients who did not return for review after 3 months for a small interview. The pre-set questions used in an interview in the Surgical-Out-Patient Department included the duration of pain, pain at the operation site, type of post-operative analgesia and clinical recurrence requiring another herniorrhaphy. Physical examination in the Surgical-Out-Patients clinic was used to determine post-operative recurrence. In cases where the post-operative pain persisted for more than 6 months, patients were encouraged to return to the Surgical Out-Patient Clinic.

3. RESULTS

One hundred and fifty eight patients presented with an inguinal hernia between 1st April 2008 and 31st July 2012 and all patients had a modified Bassini repair. Mean age was 44.84 years. The male:female ratio was 3.65:1 with hernias occurring mostly in male patients (Table 1). Two of the patients (1.26%) needed a second herniorrhaphy operation for recurrence. Post-herniorrhaphy pain/discomfort was reported in 22 (13.92%) patients and this pain/discomfort lasted for at least 3 months post-operatively (Table 2).

Table 1. Demographics of patients with inguinal hernia

Age	
Range of age	15 – 86 years
Mean age	44.84 years
Sex	
Male patients	124
Female patients	34
M:F ratio	3.65:1

Table 2. Clinical characteristics of patients with inguinal hernia

Right sided Inguinal Hernia	103
Left sided Inguinal Hernia	47
Bilateral Inguinal Hernia	8
Recurrent Inguinal Hernia	2
Inguino-scrotal Hernia	20
Elective hernia repairs	154
Emergency hernia repairs	4
Post-herniorrhaphy	22
Pain/discomfort >3months	

Table 3. Demographics & clinical characteristics of patients who developed post-inguinal herniorrhaphy groin pain

Age	
Mean age	48.82 years
Range of age	19 – 75 years
Gender	
Male	21
Female	1
Clinical Characteristics	
Right sided Inguinal hernia	13
Left sided Inguinal hernia	9
Inguino-scrotal hernia	20
Recurrent hernia	2

Table 3 shows that the majority of patients presenting with chronic groin pain were male patients and had inguinoscrotal hernia as a clinical presentation. Complications such as recurrent inguinal hernia in two patient resulted in them developing chronic groin pain.

4. DISCUSSION

In rural settings in Africa, hernia repair is often performed for emergency incarceration or strangulation due to the lack of resources for elective surgery (Warwick A et al., 2013). A high mortality is associated with the late presentation of complications such as strangulation or incarceration with inguinal hernias. Therefore in

order to prevent these devastating complications, elective repair of inguinal hernias is of paramount importance. Despite this, one hundred and fifty four inguinal hernias were repaired electively in our hospital in Northern Uganda over a period of fifty two months. Only four patients were operated as an emergency due to strangulated inguinal hernia.

Over 60% of our elective hernia operations were carried out under a local anaesthetic despite the large size of inguinal hernias seen in Africa. It was cheaper to carry out the procedure under local anaesthetic and the majority were carried out as day case surgery procedures. Compared to general and regional anaesthesia the use of local anaesthesia for inguinal hernia has substantial advantages (Nordin P et al., 2003). Although inguinal hernia repair under local anaesthesia takes a longer time in theatre this is compensated by a shorter time for anaesthesia compared to general and regional anaesthesia. Prolonged post-operative hospital stay after inguinal herniorrhaphy is related to anaesthetic side effects. Regional anaesthesia has been found to be associated with a higher rate of urinary retention requiring urethral catheterisation (Nordin P et al., 2003).

In Sub-Saharan Africa, a major problem found is the lack of follow up of patients. However in our study patients were reviewed in the Surgical Out-Patients Clinic for up to 3 months post-operatively. The complication rate was low post-operatively and the objective of this study was to determine the frequency of the groin pain post-operatively. After inguinal hernia repair the incidence of groin pain has been found to vary between 1% and 19% [20-22]. Willert W et al., has reported an incidence of chronic groin pain even up to 40% [23]. This study has found the occurrence rate to be up to 14%. Since more male patients presented with an inguinal hernia then female patients, chronic pain was more commonly encountered in male patients.

The large number of elective hernias compared to emergency hernia operations carried out in our Hospital may be due to the low cost of the procedure in this Missionary facility hence improving access of care. In up to 6% of patients chronic groin pain is a severely debilitating problem [17,24]. The effective treatment of this surgical problem is difficult due to lack of evidence-based management and unclear aetiology [17,18]. Chronic groin pain may be neuropathic due to damage or compression to

the ilioinguinal nerve. Whilst mechanical pressure from a mesh or resulting scar post-operatively may result in non-neuropathic pain, also leading to chronic groin pain. In this case series, modified Bassini repairs were carried out on all inguinal hernia repairs and no mesh repair was carried out.

This study did not seek to determine the preoperative predictive factors which determine the risk of post-operative pain. These predictive factors include the presence of preoperative pain, depression, anxiety, psychological vulnerability and radiation therapy [25,26]. The symptoms of chronic groin pain may vary from a sharp shooting pain to a dull ache along the distribution of the ilioinguinal nerve [27]. In order to identify the exact aetiology of chronic groin pain a thorough history and clinical examination should be carried out postoperatively.

Studies have shown that age, gender, presence of preoperative pain, type of anaesthesia, pre-emptive analgesia and nerve injury are predisposing factors to chronic groin pain [28]. The risk of chronic groin pain has been found to decrease with increasing age in a study by Courtney CA et al [29]. In this study it was found that in patients >65 years of age only 14-17% developed pain however up to 39-58% of patients <40 years developed pain. In the younger age group the percentage of patients with severe pain was also higher [30]. Several studies have shown that patients with significant preoperative pain tend to have a greater risk of developing groin pain. However more detailed studies are required which investigate the history and type of pain in different parts of the body other than the inguinal region [28,31,32].

Studies have shown that early pain post-operatively correlates well with the development of chronic inguinal groin pain [33-35]. Callesen et al showed that compared to those patients with a lower postoperative pain score, those patients that had a high early postoperative pain score had a higher risk of chronic groin pain [35]. Therefore the preventative effect of acute pain management post-operatively needs further attention in the management of chronic inguinal pain.

There is controversy during inguinal hernia repair regarding which treatment to reserve for the inguinal nerves. Whilst some authors recommend elective division of the ilioinguinal nerve others recommend the preservation of the

nerve to reduce the risk of postoperative chronic groin pain [36-38]. During all of our inguinal hernia operations in this case series we preserved the ilioinguinal nerves.

The true prevalence of chronic groin pain in the African setting can be difficult to establish due to patients not returning back to seek care and treatment at the same facility. In this study less than one-fourth of patients came back and most would take self-medication or seek for help. Recall bias of symptoms was a limitation encountered in this retrospective study. This study did not differentiate between non-neuropathic and neuropathic type of pain. The perception of pain could have been higher in patients with mental disorders however this condition was not assessed in our study.

5. CONCLUSION

In our study in rural Africa, chronic groin pain following inguinal hernia repair was 14% and should not be ignored as it may cause significant morbidity to patients. Preservation and identification of the ilioinguinal nerve is of paramount importance. Prevention of early complications following inguinal hernia repair and measures taken to suppress early post-operative pain are important to reduce the occurrence of chronic groin pain. The low incidence of chronic groin pain in our study may be due to the majority of them being operated as elective procedures under local anaesthesia with routine identification of the ilioinguinal nerve. However, a study with a large sample size and longer follow up may be required to ascertain the true prevalence of chronic groin pain following inguinal hernia surgery in rural Africa.

CONSENT

The author declares that written informed consent was obtained from all the patients that underwent hernia procedures in this study.

ETHICAL APPROVAL

As per international standard standard and University standard ethical approval has been collected and preserved by the author.

ACKNOWLEDGEMENTS

The author wishes to thank the late Major Dr. Andrew Vuni, former Head, Department of Surgery, St. Joseph's Maracha Hospital, West

Nile, Uganda for his support and help in setting up the necessary training environment to perform hernia operations amongst many other operations. The author also thanks nursing staff, medical officers and anaesthetists who worked in the surgery theatres for their support. Finally the author acknowledges the enormous support and thanks the hospital administration for giving clearance to carry out this research project.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Warnick A, Oppong C, Boateng Doah B, Kingsnorth A. Inguinal hernia repair is Safe in Africa. *East and Central African Journal of Surgery*. 2013;18(2).
2. Ohene-Yeboah M, Abantanga FA. Inguinal hernia disease in Africa: A Common but Neglected Surgical Condition. *West Afri J Med*. 2011;30(2):77-83.
3. Lofgren J, Makumbi F, Galiwango E, et al. Prevalence of Treated and Untreated Groin Hernia in Eastern Uganda. *Br J Surg*. 2014;101(6):728-34.
4. Burcharth J, Pedersen M, Bisgaard T, et al. Nationwide prevalence of groin hernia Repair. *PLoS ONE*. 2013;8(1):e54367.
5. Nordberg EM. Incidence and estimated need of caesarean section, inguinal hernia repair, and operation for strangulated hernia in rural Africa. *Br Med J (Clin Res Ed)*. 1984;289:92-93.
6. Berri T. Chronic Neuropathic pain following inguinal hernia repair. *Formosan Journal of Surgery*. 2019;52(4):111-121.
7. Treede RD, Jensen TS, Campbell JN, et al. Neuropathic pain: Redefinition and a grading system for clinical and research purposes. *Neurology*. 2008;70:1630-5.
8. Bay-Nielsen M, Kehlet H, Strand L, et al. Quality assessment of 26 304 herniorrhaphies in Denmark: a prospective nationwide study. *Lancet*. 2001;358:1124-1128.
9. Galukande M, Nakalanzi A, Oling M. Chronic post inguinal herniorrhaphy pain: Prevalence and Risk factors. *The Annals of African Surgery*. 2016;13(2).
10. Bjurstrom MF, Nicol AL, Amid PK, Chen DC. Pain control following inguinal herniorrhaphy: current perspectives. *J Pain Res*. 2014;7:277-290.
11. Loos MJA, Roumen RMH, Scheltinga MRM. Classifying post-herniorrhaphy pain syndromes following elective inguinal hernia repair. *World J Surg*. 2007;31(9):1760-1765.
12. Kehlet H, Curlick H, Jensen T, et al. Persistent Postsurgical Pain: Risk Factors and Prevention. *Lancet*. 2006;367:1618-1625.
13. Racz G, Hagstrom D. Iliohypogastric and Ilioinguinal Nerve Entrapment: Diagnosis and Treatment. *Pain Digest*. 1992;2:43-8.
14. Starling JR, Harms BA, Schroeder ME, et al. Diagnosis and treatment of genitofemoral and Ilioinguinal Entrapment Neuralgia. *Surgery*. 1987;102(4):581-6.
15. Wantz GE. Testicular atrophy and chronic residual neuralgia as risks of inguinal hernioplasty. *Surg Clin North Am*. 1993;73(3):571-81.
16. Haroutiunian S, Nikolajsen L, Finnerup NB, Jensen TS. The neuropathic component in persistent postsurgical pain: A systematic literature review. *Pain* 2013;154:95-102.
17. Aroori S, Spencer Roy AJ. Chronic pain after hernia surgery –An Informed Consent Issue. *Ulster Med J*. 2007;76(3):136-140.
18. Aasuang E, Kehlet H. Chronic postoperative Pain: The case of inguinal herniorrhaphy. *Br J Anaesth*. 2005;95(1):69-76.
19. Classification of Chronic Pain. Descriptions of chronic pain syndromes and definitions of pain terms. Prepared by the International Association for the Study of Pain, Subcommittee on Taxonomy. *Pain Suppl*. 1986;3:S1-226.
20. Cunningham J, Temple WJ, Mitchell P, et al. Cooperative hernia study. Pain in the Post Repair Patient. *Ann Surg*. 1996;224(5):598-602.
21. Kumar S, Wilson RG, Nixon SJ, et al. Chronic pain after laparoscopic and open mesh repair of groin hernia. *Br J Surg*. 2002;89(11):1476-9.
22. Lichtenstein IL, Shulman AG, Amid PK, et al. Cause and prevention of post herniorrhaphy Neuralgia: A proposed protocol for treatment. *Am J Surg*. 1988;155(6):786-90.
23. Willaert W, De Bacquer D, Rogiers X, et al. Open preperitoneal techniques versus lichtenstein repair for elective inguinal hernias. *Cochrane Data base of Systematic Reviews*. 2012;7:Art. No CD008034.

24. Alfieri S, Amid PK, Campanelli G, et al. International guidelines for prevention and management of post operative chronic pain following inguinal hernia surgery. *Hernia*. 2011;15(3):239-49.
25. Perkins FM, Kehlet H. Chronic pain as an outcome of surgery: A review of predictive factors. *Anesthesiology*. 2000; 93:1123-33.
26. Macrae WA. Chronic pain after surgery. *Br J Anaesth*. 2001;87:88-9.
27. Hakeem A, Shanmugam V. Inguinodynia following lichtenstein tension-free hernia repair: A review. *World J Gastroenterol*. 2011; 17(14):1791-6.
28. Manangi M, Shivashankar S, Vijaya Kumar A. Chronic Pain after Inguinal Hernia Repair. *International Scholarly Research Notices*. 2014;Article ID 839681:1-6.
29. Courtney CA, Duffy K, Serpell MG, O'Dwyer PJ. Outcome of patients with severe chronic pain following repair of groin hernia, *British Journal of Surgery*. 2002;89(10):1310–1314.
30. Bay-Nielsen M, Perkins FM, Kehlet H. Pain and functional impairment 1 year after inguinal herniorrhaphy: A nationwide questionnaire study, *Annals of Surgery*. 2001;233(1):1–7.
31. Wright D, Paterson C, Scott N, Hair A, O'Dwyer PJ. Five-year follow-up of patients undergoing laparoscopic or open groin hernia repair: A randomized controlled trial, *Annals of Surgery*. 2002; 235(3):333–337.
32. Poobalan AS, Bruce J, Smith WC, King PM, Krukowski ZH, Chambers WA. A review of chronic pain after inguinal herniorrhaphy, *Clinical Journal of Pain*. 2003;19(1):48–54.
33. Lau H, Patil NG, Yuen WK, Lee F. Prevalence and severity of chronic groin pain after endoscopic totally extraperitoneal inguinal hernioplasty, *Surgical Endoscopy and Other Interventional Techniques*. 2003;17(10): 1620–1623.
34. Heikkinen T, Bringman S, Ohtonen P, Kunelius P, Haukipuro K, Hulkko A. Five-year outcome of laparoscopic and Lichtenstein hernioplasties, *Surgical Endoscopy and Other Interventional Techniques*. 2004;18(3):518–522.
35. Callesen T, Bech K, Kehlet H. Prospective study of chronic pain after groin hernia repair, *British Journal of Surgery*. 1999; 86(12):1528–1531.
36. Wantz GE. Complications of inguinal hernia repairs, *Surgical Clinics of North America*. 1984;64(2):287–298.
37. Amid PK. A 1-stage surgical treatment for postherniorrhaphy neuropathic pain: Triple neurectomy and proximal end implantation without mobilization of the cord, *Archives of Surgery*. 2002;137(1):100–104.
38. Condon RE, Nyhus LM. Complications of groin hernia, in *Hernia RE, Condon, Nyhus LM. Eds., Lippincott Williams & Wilkins, Philadelphia, Pa, USA, 4th Edition. 1995;269–282.*

© 2021 Wismayer; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<https://www.sdiarticle4.com/review-history/71566>