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EFFECT OF ABSORBABLE SUTURES ON POST THORACOTOMY PAIN THE SEQUEL OF NERVE ENTRAPMENT.

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Abstract
Objective: To study the effect of use of absorbable suture material in thoracotomy closure on the chronic post-thoracotomy pain.
Keywords: *Open thoracotomy, Nerve entrapment, Persistent pain, Absorbable suture*

Introduction

The pain that occurs following a thoracotomy procedure, which is also known as post thoracotomy pain, is quite commonly very severe [1] and uncontrolled pain can have negative consequences and transition to chronic pain.[2]

The International Association for the Study of Pain (IASP) defines post thoracotomy pain as symptoms of pain occurring within the area of the thoracotomy incision and persisting for at least two months or more following the surgical procedure.[1]

Long-term pain is a common sequel of thoracotomy, occurring in approximately 50% of patients 2 years after thoracic surgery. [3,4] and as much as 30% of patients may continue to experience the pain for four to five years after the surgery or even permanently.[5]

Chronic pain is common after thoracotomy with reported prevalence rates of 20–60%. The pain may be caused by damage to the intercostal nerves during surgery.[6]

Considerable efforts have been directed toward reducing the intensity of acute post-thoracotomy pain, based on the assumption that acute pain is a predictive factor for chronic pain.[7] Because post-thoracotomy pain shows many neuropathic components,[8] it is likely that intercostal nerve injury or entrapment plays a key role in the development of this condition. This concept has been reinforced by neurophysiologic studies that demonstrate an association between intercostal nerve damage and the intensity of post-thoracotomy pain.

One of the theories for causation of this pain is related to the operative technique of thoracotomy and closure. [9] The majority of patients do not seek help for their pain, only declaring it upon direct questioning [10]. However, almost 50% of patients find that their normal daily life is limited by pain at 1 year after thoracotomy [11]. There are some patients who are incapacitated by chronic pain of thoracotomy and can cause significant patient distress which is frequently difficult to manage.[12]

Many investigators have reported improvement in postoperative pain by using nerve-sparing techniques, such as intercostal suturing, edge-to-edge sutures, and protection of the intercostal nerve by mobilizing the intercostal bundle.[13] suggesting either the direct injury or the entrapment of the intercostal nerve bundle. With this consideration, we attempted to assess the validity of suture entrapment of intercostal nerve during thoracotomy closure and the advantages of release of entrapment after the absorbable suture gets removed.

Material & Methods

We included two groups of 50 patients each in our study. All of them had undergone postero-lateral thoracotomy for benign lung conditions for the first time. In one group, the thoracotomy was closed by a non absorbable suture loop while as in the other group we used absorbable Vicryl 1 No. suture. We followed all the patients for 3 years for complaints of pain and paresthesias. All the patients were evaluated for the severity and persistence of pain.

Results

Among the 50 patients having their thoracotomy closed by non-absorbable suture, an alarming number of 42 (84%) patients had severe persistent post thoracotomy pain even after 2 years, seldom relieved by analgesics. 6(12%) of the patients complained of bearable thoracotomy site pain, that did not affect their quality of life. Remaining 2 patients negated any sort of wound pain and described it as mild discomfort for which no treatment was sought.

Contrarily, only 6 (12%) patients of the second group complained of persistent bothersome pain and paresthesias for about 1 year. 2 of these 6 patients graded

the pain of same severity with occasional relief by conventional analgesics after 2 years while as remaining 4 had their pain settled satisfactorily after 2 years.

Remaining 44 (88%) patients did not complain of any troublesome pain after 2 months of thoracotomy to 3 years of follow up.

Discussion

Thoracotomy causes severe and bothersome pain in majority of the patients and poses a challenge to clinicians. [2, 4] It remains a reason of considerable agony for the patients on follow up. The drug treatment has been unsatisfactory in most of the patients though the neuropsychiatric agents have shown good results in smaller groups of patients.[8]

Nerve sparing thoracotomy practices and securing of neurovascular bundle have shown less post-thoracotomy pain [10,14], suggesting the role of nerve injury or entrapment in its aetiology. Apart from muscle sparing thoracotomy, prevention of intercostal nerve injury or entrapment during the closure and eventual release by the use of absorbable sutures appear to be beneficial strategies to prevent severe chronic post-thoracotomy pain and paresthesias.[15]

Conclusion

Use of absorbable suture like Vicryl in the closure of thoracotomy prevents late nerve entrapment and consequential persistent pain. The onset as well as the severity of the chronic post thoracotomy pain and paresthesias is remarkably decreased with this practice.

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