REPAIR OF INGUINAL HERNIA UNDER LOCAL ANAESTHESIA

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SUMMARY

This study considers repair of inguinal hernia under local anaesthesia with intravenous sedation and analgesia in two district hospitals of NWFP. Data of the study was collected in surgical units of Agency Head quarters hospital Lndikotal and district headquarter hospital Bannu over a period of five years form January 1994 to December 1998. Total number of patients were 180. Seventy five patients (41.4%) were of high risk (ASA-IV). Patients were admitted on the day of operation. The aim of the study was to justify the use of local anaesthesia with intravenous sedation and analgesia for the repair of inguinal hernia in district hospitals. Majority of patients (66.6%) were stress free preoperatively. One hundred and thirty five patients (75.0%) were pain free during operation Anaesthesia effects and associated sedation and analgesia relieved post operative pain for 4-5 hours in 83.3%. majority of the patients (97.2%) had a short recovery time and were discharged on first post operative day. There was no mortality. Complications were recorded in 81 patients. Short hospital stay makes this procedure cheaper than repair done under general anaesthesia. It is concluded that in district hospitals where the working conditions are poor, the repair of inguinal hernia with intravenous sedation and analgesia, is an advantageous procedure because of: greater safety, better post operative pain control, short recovery time, and reduced cost.

INTRODUCTION

External abdominal hernias make a major portion of the general surgical work load. Seventy three percent of this work load is the repair of inguinal hernia. It is more common in males than females. Local anaesthesia is not used routinely for the repair of inguinal hernias except in Shouldice clinic in Toronto, where the vast majority of hernias are repaired under local anaesthesia.[1]

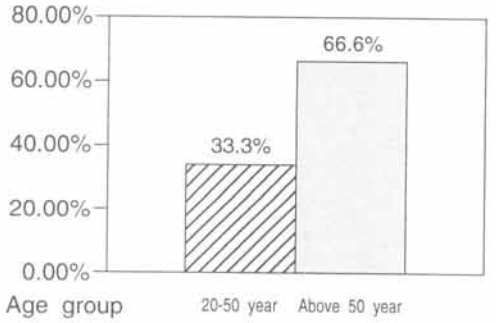
This study of repair of inguinal hernia under local anaesthesia was carried out in non teaching district hospitals with limited facilities and limited team work. Trained qualified anaesthetists are not available in most of the district hospitals. Operation theatres of these hospitals are poorly equipped. Anaesthesia machines are not in proper working order. Measures like oxymeter, ECG monitors and other resuscitative equipment are not present. Because of these poor conditions general anaesthesia is not safe in district hospitals. Surgical procedures under local anaesthesia is a practical alternative for a surgeon working in a district hospital.

This study aims to justify the use of local anaesthesia with intravenous sedation and analgesia for the repair of inguinal hernia.

MATERIAL AND METHODS

The study was carried out in surgical units of district headquarter hospital Bannu

Figure I



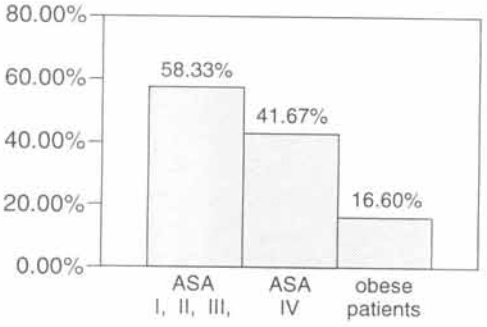
and Agency headquarter hospital Landikotal over a period of five years form January 1994 to December 1998. All patients who underwent herniorrhaphy under local anaesthesia were entered into the study.

Total number of patients was 180. Only two were females and the rest were males. They were all elective cases. All of them were examined, investigated and were admitted on the day of operation.

One hundred and twenty patients (66.67%) were in the age group of fifty years and above. Sixty patients (33.3%) were in age group of 20-50 years (Fig-I).

Seventy five patients (41.67%) were of high risk because of the associated diabetes mellitus, respiratory and cardiac problems. Thirty (16.6%) were obese patients (Fig-II)

Figure II



Technique used in this study is simple. Preparation was the same as that for repair under general anaesthesia. Intravenous line with intravenous fluid was set up to every patient. Anaesthesia technique was explained to patient before giving the block, particularly about the early infiltration pain and mild dragging sensations during the operation. Prophylactic antibiotic was given to every patient. One gram of injection velosef was given just before operation and one gram was repeated postoperatively at eight hourly interval for 24 hours. Intravenous sedation and analgesia in the form of injection valium 10 and injection sosegan (30 mg) were given to all patients. In case of old and debilitated patients the dose of sedation and analgesia was reduced to half.

A sterile solution of xylocaine 0.5% was made by mixing 20 ml of plain xylocaine 2% with 60 ml of normal saline or distilled water in a sterilized bowl. Xylocaine 2% with adrenaline can also be used for making the solution. Dose of xylocaine use was 3 mg/kg body weight and 7 mg/kg body weight with vasoconstrictor.

The 12th thoracic, iliohypogastric and ilioiguinal nerves were blocked by injection of 10 to 15 ml of xylocaine solution deep to external oblique aponeurosis 1.5 cm medial to the anterior superior iliac spine. Genital branch of genitofemoral nerve was blocked by injecting 10 to 15 ml of xylocaine solution above the mid point of the inguinal ligament deep to the external oblique. The neck of the sac was infiltrated with 10 ml of solution at this time or later when it was exposed. Subcutaneous tissue in and around this line of incision was infiltrated with 20 to 30 ml of the solution. Contralateral nerve fibers were blocked with in filtration of 5 to 10 ml of xylocaine solution in the midline above pubic symphasis for 5-6 cm length. Rest of the prepared solution was kept ready for infiltration deep in operation field when patient felt pain during the procedure.

Technique of herniorrhaphy was that of making a darn with proline.[1] The repair was completely tension free[10,11,12].

Essential precautions of the local anaesthesia technique are:

1. Pulling the piston of the syringe before injecting the xylocaine is essential to confirm extravascular position of the needle.
2. Waiting for 2-3 minutes after infiltration so that xylocaine works.
3. Knowledge of the dose and complications of local anaesthesia and measures to treat these complications is very essential.

Xylocaine with adrenaline would be used cautiously in patients with epilepsy, hypertension, impaired cardiac conduction and in patients with impaired hepatic function.

Treatment of acute toxicity is as follows:

1. Keep patient in supine position and raise the legs.
2. Ensure patient airway. Ventilate with oxygen. This is important since toxicity increases with acidosis.
3. Ensure a good IV line. Hypotension is treated with intravenous fluids and if severe dopamine may be required.
4. If convulsions occur then intravenous diazepam or thiopentone is required to control the convulsive activity.

RESULTS

The study was evaluated on the following criteria:

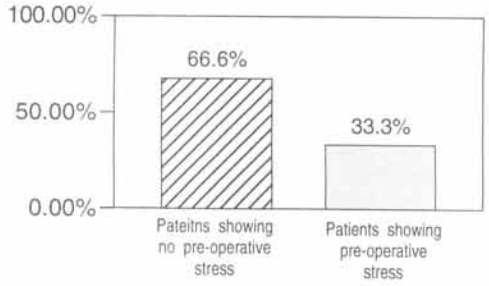
1. Preoperative stress and anxiety.
2. Intraoperative pain.
3. Postoperative pain.
4. Hypersensitivity reactions are extremely rare and have not been seen in any case of this study. These may be characterized by cutaneous lesions, urticaria, oedema or anaphylactic reactions. Detection of sensitivity by skin testing is of doubtful value.

   Other toxic effects of xylocaine are usually the result of excessively high blood concentration due to inadvertent intravascular injection, excessive dosage and rapid absorption. In such circumstances systemic effects occur, involving CNS and CVS. CNS reactions are excitatory or depressant and may be characterized by nervousness, dizziness, blurred vision and tremors followed by drowsiness, convulsions, unconsciousness and possibly respiratory arrest. CVS reactions are depressant resulting in hypotension, myocardial depression, bradycardia and possible cardiac arrest.
5. Morbidity and mortality.
6. Duration / stay in hospital.
7. Cost of operation.

Patients were admitted on the day of operation. They were not disturbed by the hospital environment as is usual with admission a night before. One hundred and twenty (66.67%) patients showed little or no anxiety and stress preoperatively. Sixty (33.33%) patients were under sufficient stress and anxiety which was reduced to almost none with the use of intravenous sedation and analgesia on operation table (Fig-III).

One hundred and thirty five (75%) patients were completely free of preoperative pain. Forty five (25%) patients showed some degree of pain and restless-

Figure III

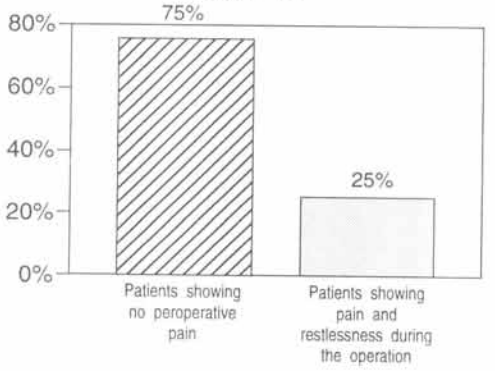


ness. The percentage of the patients showing pain were mostly in young age group and obese patients. Simple reassurance helped this percentage (Fig-IV).

One hundred and fifty (83.33%) patients remained pain free postoperatively for 4-5 hours. Thirty patients (16.73%) felt postoperative pain for two hours. In both groups intramuscular injection of diclofenac was very effective for at least 12 hours.

Forty patients (22.3%) went into urinary retention. This percentage was in old age group. This was relieved with good analgesia and urethral catheterizatin. Two patients (1.1%) developed paralytic ileus. This occurred in big hernias where the intestine stayed outside the abdomen for a long time. Because of early mobilization no patient developed chest infection or exacerbation of pre existing chest problem. One patient (0.5%) developed myocardial infarction in postoperative period. This occurred in

Figure IV



elderly patients with previous history of ischemic heart disease. He was treated by local physician and made uneventful recovery. Twenty five patients (13.8%) developed scrotal hematoma; this happened in big hernias. These were treated conservatively and settled in four to five weeks. Ten patients (5.5%) developed wound infection. Testicular atrophy, was noted in only one case (0.5%). Recurrence was reported in two patients (1.1%). There were no complications relating to xylocaine toxicity. Mortality was zero (Fig-V).

One hundred and thirty (72.22%) were discharged on first postoperative day and were advised oral antibiotics and analgesics. Twenty (11.11%) were discharged on second day. Thirty (16.66%) were discharged on third day on patients request (Fig-VI).

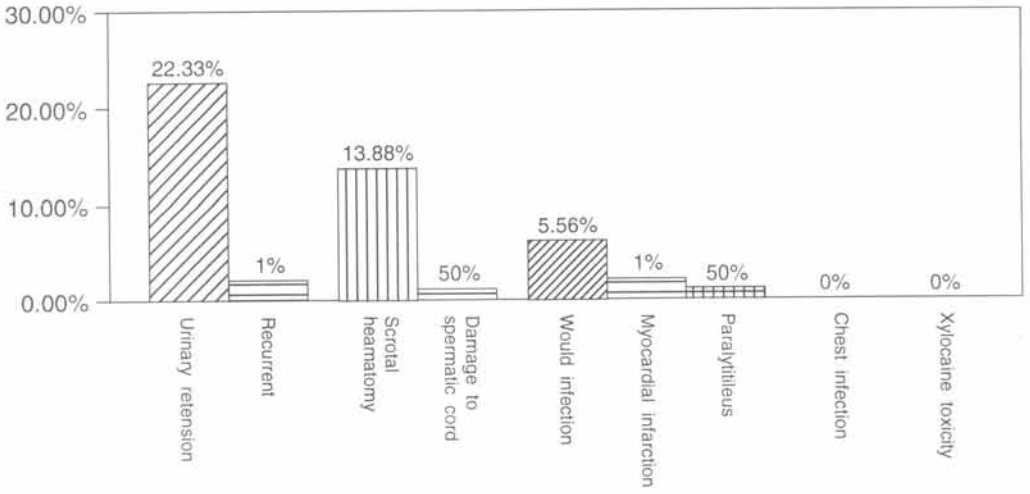
Taking into account the cost of the drugs and short hospital stay, the cost of repair under local anaesthesia is 50% of the repair under general anaesthesia. (About Rs. 2000 for repair under G.A and Rs. 1000 for repair under L.A).

DISCUSSION

Inguinal hernia is a common surgical procedure. A renewed interest in recommending local anaesthesia for inguinal hernia repair[1,2] has been brought about by the rapid introduction of tension free hernioplasty, which is thought to be easier to perform than conventional methods of hernia repair. While initially one may think local anaesthesia to be safer than general anaesthesia, particularly for high risk patietns undergoing hernia repair, there are no large clinical trials in this area to answer this question. Clinically significant complications after general anaesthesia hernia repair are rare in centres where standard anaesthesia facilities are available.

General anaesthesia has the advantage of speed and 100% efficiency. Controlled

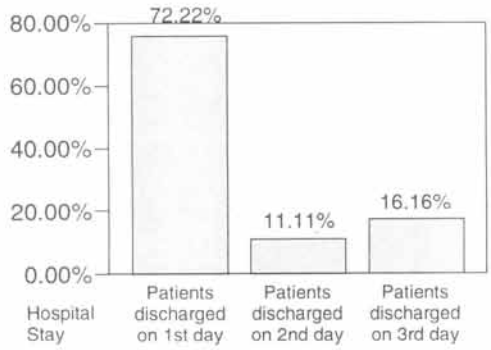
Figure V



ventilation is easily instituted where necessary, assuring oxygenatin and carbondioxide elimination. The circulatory insult in patients with cardiovascular disease is often more easily controlled under general anaesthesia than when major central neural block with local anaesthetic is use.[3] The aim of our study was to justify the use of local anaesthesia for repair of inguinal hernia, in centres where the working conditions are far from satisfactory and general anaesthesia is not safe.

Operation is stressful for patient which is further aggravated when patient is admitted a night before. This stress of operation can be decreased by asking the patient to come on the day of operation after investigating him or her as OPD case.[4] Cases entered into this study were asked to come directly to operation theatre from their homes. Study showed that majority of the patients (966.6%) were stress free.

Figure VI



The aim of every anaesthesia is pain relief during operation. With successful nerve blockage, gaining the confidence of the patient by explaining the procedure prior to surgery and reassurance, all patients should feel comfortable in a procedure under local anaesthesia. Adjuvant intravenous sedation and analgesia further helps in pain relief.[5] Study of our cases showed that 75% of the patients were completely relaxed and pain free during operation. Patients (25%) showing some pain and restlessness were mostly obese and were in young age group. In obese the nerve blocking could be defective. Beside this the adjuvant sedation and analgesia have comparatively less effect on young than on old person. However reassurance helped this percentage and operations were completed comfortably.

The anaesthetic effect of xylocaine remains for about two hours. Some residual anaesthetic effect and adjuvant intravenous analgesia and sedation is good for relieving

the postoperative pain. Teasdale[5] showed that 80% patients were pain free during first three to four hours. In our study also 75% of patients were pain free for three to four hours. Twenty five percent of patients did ask for postoperative analgesia. Single injection of diclofenac helped both group of patients for 8-12 hours.

Urinary retention is a common complication that can occur in operations on groins, perineum and anal region.[5,2] This can further be exacerbaed by the pre existing enlarge prostate in old male patients. Its treatment is good analgesia and urethral catheterization. This study showed that forty patients (22.3%) went into urinary retention in old age group; they were treated with analgesia and urethral catheterization for 24 hours.

The precipitating causes of paralytic ileus in hernia repair could be, handling of intestinal loops, chronic respiratory disease, cardiac disease and general condition of the patients.[7] In our study two patients (11.1%) developed paralytic ileus. This occurred in big hernias where the gut loops stayed outside the abdomen for a long time. This was treated by keeping the patient nil by mouth for 24 hours, nasogastric suction and intravenous fluids.

Hypostatic pneumonia, a complication of all abdominal surgeries, may be prevented by early mobilization and chest physiotherapy. Hernia repair under local anaesthesia has the advantage of early mobilization, short recovery time and no endotracheal intubation.[5] This is evident from our study that no patient developed respiratory infection.

The precipitating causes of acute myocardial infarction in a postoperative patient could be postoperative pain, operation stress and previous cardiac status of the patietn.4 In this study only one patient (0.55%) developed myocardial infarction during postoperative period. This was in a 75 years old patient with previous history of C.A.D. He made uneventful recovery while managed by physician.

Scrotal haematoma is common in the repair of big hernias.[2] This was noted in 13.8% of patients in this study.

Repair of hernia is a clean operation. In good centre infection should be less than 1%.[7] Unfortunately the working conditions of our district hospitals are not satisfactory. Sterilization is substandard. That is why in our study wound infection is comparatively high and is 5.56%.

Follow up of patients is difficult in district hospitals. That is why data of long term complications like recurrence and damage to spermatic cord is incomplete. However two cases (1.11%) of recurrence and one case (0.5%) of spermatic cord damage were noted in one year.[9] The underlying suspected cause of recurrence in these two cases was chronic cough. Kings north study[6] showed 2.5% recurrence in repair under local anaesthesia and no other delayed complication.

Xylocaine toxicity is usually due to high blood concentration secondary to inadvertent intravenous injection, excessive dosage and rapid absorption.[8] Following the essential precautions of local anaesthetic technique these toxic effects can be prevented. This is clear from our study that there were no complications relating to xylocaine toxicity.

Mortality of hernia repair under general anaesthesia in good centres is less than 1%. In our study mortality was zero. Similarly study carried out by peper[1] has also zero mortality. Because of the zero mortality this procedure is the best choice for old and risky patients in substandard working conditions.

Our study showed that repair under local anaesthesia is more economical because of short hospital stay and low drug cost. Majority of patients (97.2%) stayed only for one day. A number of studies have

also demonstrated reduced postoperative recovery time for local compared with general anaesthesia hernia repair.[3]

Use of local anaesthesia include greater safety for the patient, better postoperative pain control, sort recovery time, reduced cost when compared with hernia repair under general anaesthesia.[1,2,4], Looking into the results we may claim the same benefits.

CONCLUSION

In district hospitals with limited facilities, repair of inguinal hernia under local anaesthesia with intravenous sedation and analgesia, is the procedure of choice in age group of 20 years and above because of:

1. Greater safety
2. Better postoperative pain control.
3. Short recovery time
4. Reduced cost.

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