Standard Operating Procedure (SOP)

Management of Rectus Sheath Catheters Post Abdominal Surgery

Version:	2.0
Date of Issue:	13/06/2024
Date Review due:	May 27
Applicable to:	Anaesthetics, Gynaecology
Approval obtained at/when:	CSS Governance Meeting
Grade of Change	Major Revision
Summary of Changes:	Documentation Prescription Medication dosing

Precautions:
Before proceeding to follow the described steps ensure that this is the current SOP and that it has not been superseded. **Ensure that all required equipment and materials are available and that you are familiar with their use before starting.**

Procedural Steps

Introduction:

In order to facilitate the provision of good post-operative analgesia following abdominal surgery, infusion of local anaesthetic via rectus sheath catheters can be considered, in conjunction with a multi-modal analgesic regime. This document provides guidance for anaesthetists, surgeons and nurses on how to safely manage the insertion and management of rectus sheath catheters.

Pain management can be difficult following major abdominal surgery/ laparotomy and the use of epidural analgesia is sometimes contraindicated. Local anaesthetic infiltrated into the posterior rectus sheath via a catheter can be used as an alternative for these patients. This provides analgesia to the central abdominal wall in the region of the T7-T11 dermatomes. It only provides analgesia for somatic pain, not visceral pain and hence needs to be used in addition to a multi-modal analgesic regime, likely to include PCA. Advantages over an epidural include that it can be used in coagulopathy, systemic infection and can be safely performed asleep. Potential complications are haematoma, bowel perforation (if performed with a closed abdomen) and potentially local anaesthetic toxicity.

Patient Selection:

Insertion of rectus sheath catheters should be considered in patients undergoing major abdominal surgery via a midline abdominal incision. Decision over patient suitability needs to be made by the patient's anaesthetist and surgeon. Contra-indications include local infection, allergy to local anaesthetic and patient refusal. The patient should be nursed on a surgical or high dependency/ critical care ward post-operatively. This SOP is intended for use in adults (adjustments needs to be considered for those weighing less than 50kg).

Procedure for insertion:

The catheters can be placed by the anaesthetist or surgeon. placement by the surgeon at the end of the operation is recommended for easier procedure and higher success as ultrasound guided placement by an anaesthetist at the end of the operation could be challenging due to the position of dressings on the abdomen and possible distortion of the relevant anatomy. (The ultrasound guided technique is not detailed in this SOP, but additional information is available in literature).

The catheters should be sited bilaterally at the end of the operation but before abdominal wall closure which limits the probability of bowel injury or misplacement.

Use the rectus sheath catheter kit containing a 16g Touhy needle and two catheters.
See Figures 1, 2 and 3 for detailed insertion explanation.

Administration of continuous local anaesthetic infusion via rectus sheath catheters:

The single end of the Y-connector should be attached to a continuous infusion of local anaesthetic. Instructions on preparing the anaesthetic infusion are as follows.

Using a 200ml bag of 0.125% L-bupivacaine ('plain epidural bag') and giving set, prepare the anaesthetic solution for administration as normal. Select and commence the protocol on the pump titled 'Rectus Sheath'. This is programmed to provide a continuous infusion of anaesthetic solution at a rate of 15ml/hr as default which could be modified depending on individual patient prescription.
The PCEA button should not be attached. Boluses are to be administered by the anaesthetist only, not by the patient or ward team.

The Rectus Sheath protocol is suitable for patients weighing 50kg or more.

Catheters should be labeled 'Rectus Sheath Catheter', along with date and time of insertion and a 'Local Anaesthetic Block Analgesia Prescription and Advice' form completed and attached to the patient's notes. Details of the prescription need to be entered clearly on the Expanse (Digicare) system.

Prescription on Expanse system (Digicare):
There are 2 available sets of order for rectus sheath catheter continuous infusion:
Levobupivacaine (0.125%) which is the commonly used and the pumps are programmed to deliver as a primary and Ropivacaine which can be used as an alternative or if there is short supply of Levobupivacaine.
The suitable dose for each patient should be calculated and the infusion rate prescribed as required. The usual range is 10-20 mLs/ Hr, however, the maximum daily dose should not exceed 400 mg of levobupivacaine

Removal of catheter:
The catheters can remain in situ for a maximum of 5 days. They can be removed earlier than this as decided by the treating team, or as advised by the pain team or anaesthetist.

If there are any signs of leakage, malposition or infection, they should be removed promptly.
Using an aseptic non-touch technique remove the dressing. Apply gentle traction to the catheter. This should be enough to remove it. If there is any resistance, seek assistance from the pain team or inserting surgeon.

Ensure the blue catheter tip is intact at the distal end of the catheter and document this in patient's nursing notes. Send the tip for MC&S. Cover with a non-occlusive dressing for 24 hours.

Patient monitoring during rectus sheath catheter infusion
All patients must have their observations recorded and documented in accordance with the trust guideline for 'Local Anaesthetic Block Analgesia Prescription and Advice'.
Detailed instructions of this SOP are available as part of the 'Local Anaesthetic Block Analgesia Prescription and Advice' form.

In recovery – nursing checks and observations are to be performed every 15 minutes.

On the ward – nursing checks and observations to be performed hourly for 8 hours, then if stable, four- hourly thereafter.

As per the guideline 'Local Anaesthetic Block Analgesia Prescription and Advice' – observations must include signs of catheter migration, sedation, respiratory depression, hypotension, nausea/vomiting and urinary retention and local anaesthetic toxicity.

Signs of local anesthetic toxicity:

1. Mild - restlessness/confusion, light-headedness, numbness of tongue and lips, tinnitus, double vision, blurred vision
2. Moderate – heaviness of limbs, muscular twitching, convulsions.
3. Severe – cardiac arrhythmias, hypotension, respiratory arrest cardiac arrest

If local anesthetic toxicity is suspected, stop injection, call for help (2222) and continue further management as per the AAGBI guideline

Sources/ References

Further Useful Information:

Cave G, Harrop-Griffiths W, Harvey M *et al* (2010) *AAGBI Safety Guideline: Management of Severe Local Anaesthetic Toxicity*.

Layzell M (2014) Rectus sheath catheter infusions for post-operative pain management. Nursing Standard. 28, 42, 37-43

McDermott FD, Wilson IH and Boorman P. ATOTW 195 – Surgically placed rectus sheath catheters. 2010. www.totw.anaesthesiologists.org

Tsui B.C., Green J.S., Ip V.H. Ultrasound-guided rectus sheath catheter placement. Anaesthesia, 2014, 69/10(1174-1175)

Webster K: Ultrasound guided rectus sheath block - analgesia for abdominal surgery. Update Anaesth 2010, 26:12–17

Relevant literature:

Beaussier M, El'Ayoubi H, Schiffer E *et al* (2007) Continuous preperitoneal infusion of ropivacaine provides effective analgesia and accelerates recovery after colorectal surgery: a randomized, double-blind, placebo-controlled study. *Anesthesiology*. 107, 3, 461-468

Dutton TJ, McGrath JS, Daugherty MO: Use of rectus sheath catheters for pain relief in patients undergoing major pelvic urological surgery. BJU Int 2014, 113:246–253.

Khorgami Z, Shoar S, Hosseini Araghi N, Mollahosseini F, Nasiri S, Ghaffari MH, Aminian A: Randomized clinical trial of subcutaneous versus interfascial bupivacaine for pain control after midline laparotomy. BJS 2013, 100(6):743–748.

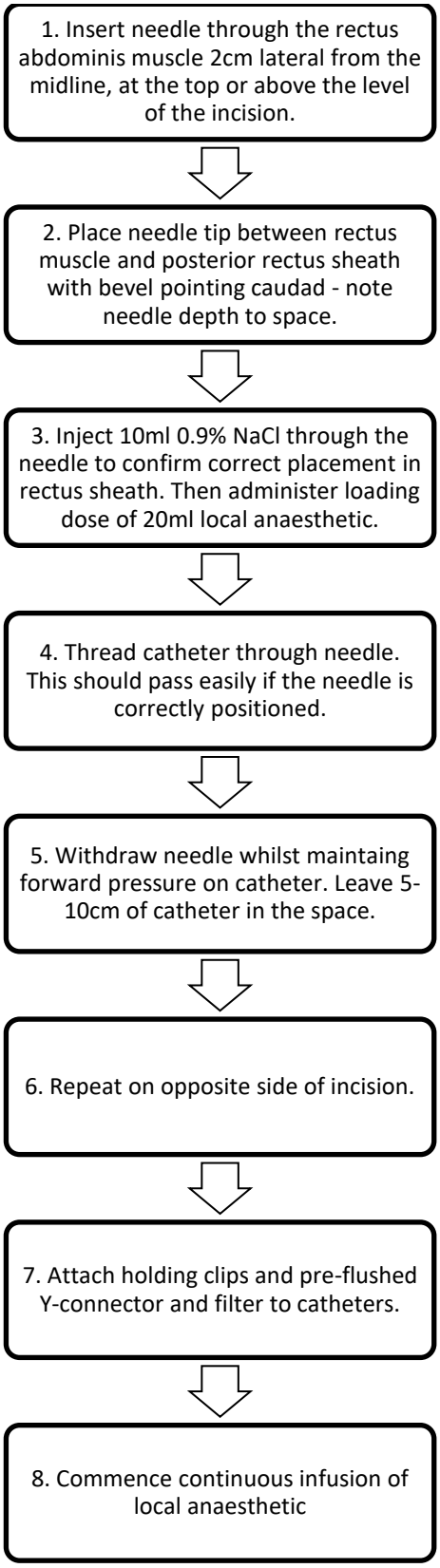
Padmanabhan J et al. Does rectus sheath infusion of bupivacaine reduce postoperative opioid requirement? Annals of the Royal College of Surgeons of England, April 2007 89/3(229-232

Parsons B, Aning J, Daugherty M, McGrath JS: The use of rectus sheath catheters for patients undergoing radical cystectomy. BJMSU 2011, 4:24–30.

Shabana A.M., Dar M., Ghanem M.A. Surgically performed rectus sheath block - Effect of morphine added to bupivacaine versus bupivacaine only: A prospective randomized controlled double blinded trial. Egyptian Journal of Anaesthesia, October 2013 29/4(401-405),

Wilkinson et al.: Thoracic Epidural analgesia versus Rectus Sheath Catheters for open midline incisions in major abdominal surgery within an enhanced recovery programme (TERSC): study protocol for a randomised controlled trial. Trials 2014 15:400

Figure 1 Quick Insertion Guide



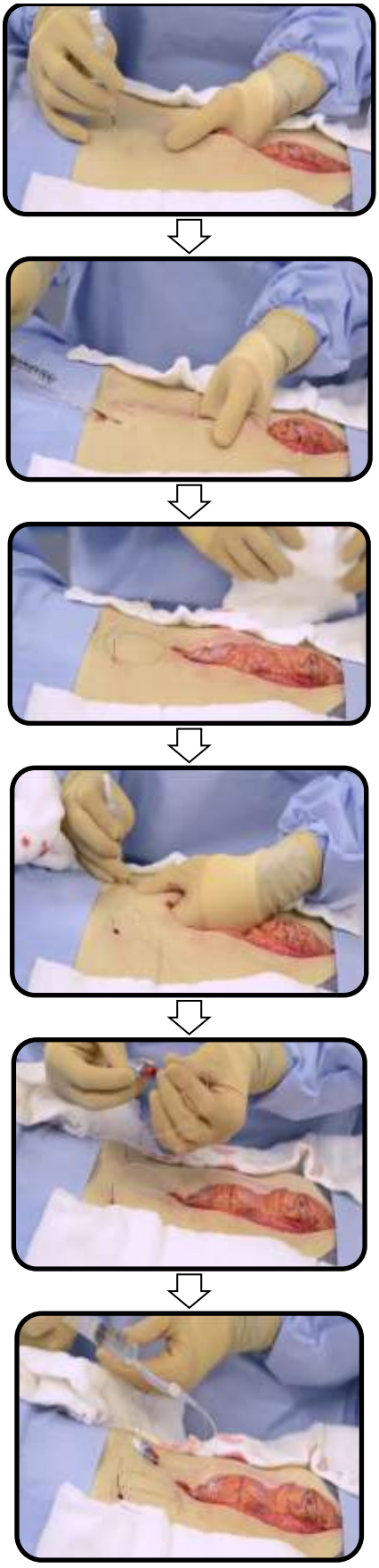


Figure 2 – Anatomical diagram of insertion technique

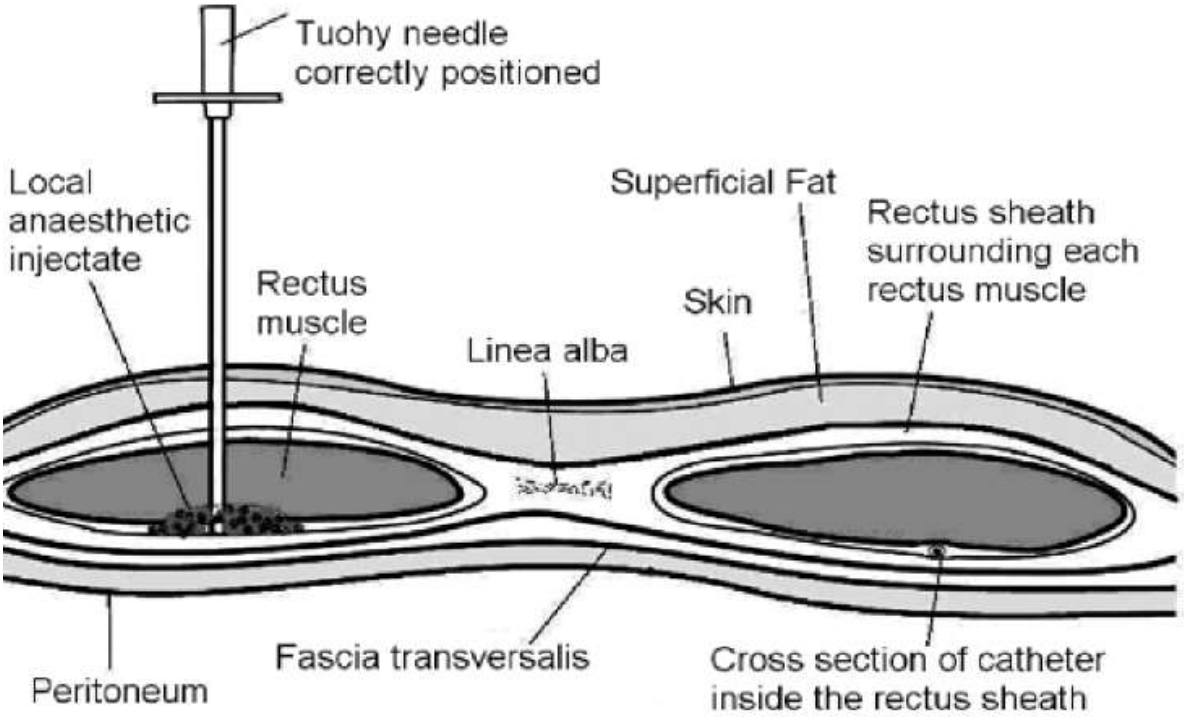
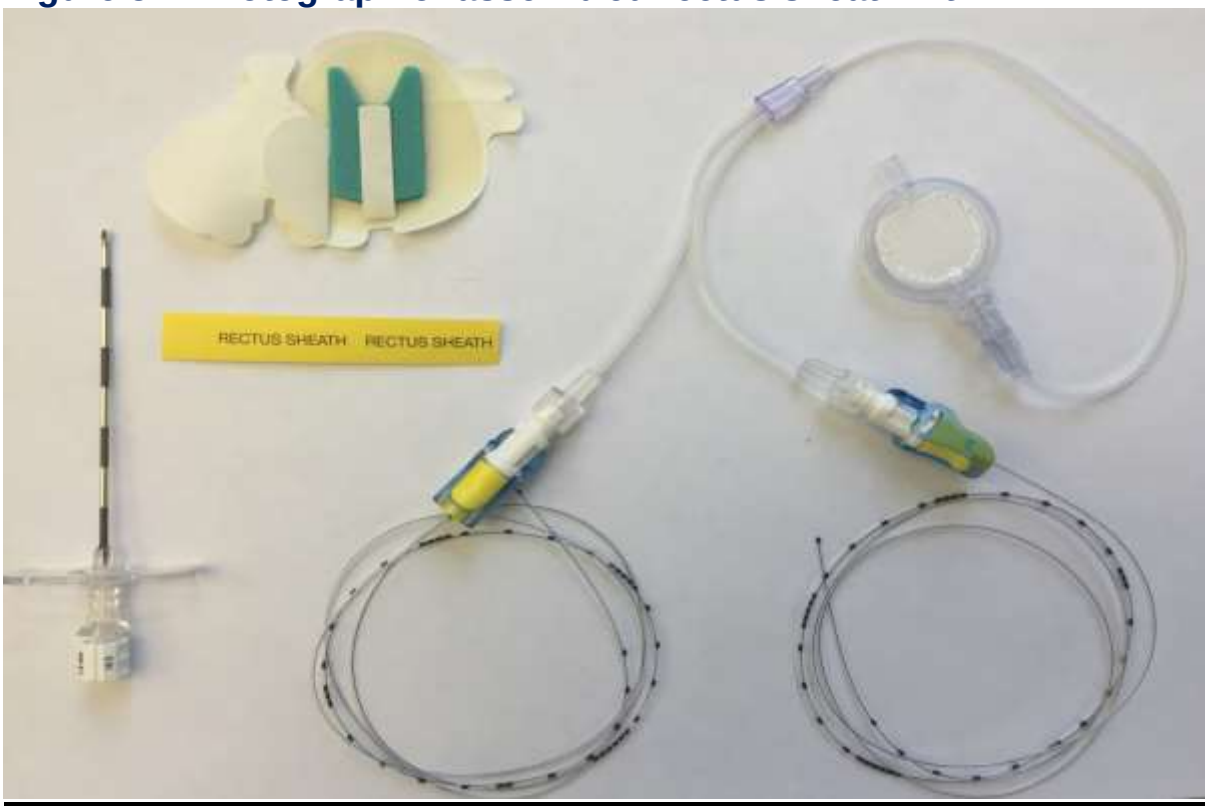


Figure 3 – Photograph of assembled rectus sheath kit



SOP Administration

1.1 Document Properties

Version:	2.0
Date of Issue:	13/06/2024
Review Interval:	3 years
Coverage	Anaesthetics; Gynaecology
Author(s):	Mohamad Elmawy
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Responsible Committee	Anaesthetic Department
Date Approved / Authorised:	15/05/2024
Date Review Due:	May 27
Storage Location:	Trust Intranet
Grade of Change	Major Revision

1.2 Version History

1.0	29/06/2017	Dr Edwin Djabetty	SOP Creation
2.0	15/05/2024	Dr Mohamad Elmawy	Documentation update, Dose details

1.3 Scope & Purpose

To optimise post-operative analgesia following major abdominal surgery for improved recovery, mobilisation, patient satisfaction and their overall experience.

This SOP applies to patients undergoing major abdominal surgery involving a midline incision and presents an alternative to epidural analgesia. This document provides guidance only and ultimately decisions regarding analgesia are taken by the individual anaesthetist and surgeon, taking into accounts the clinical information and patient's wishes.

Non-compliance with this guideline could potentially result in catheter misplacement and/or unsafe administration of local anaesthetic resulting in local anaesthetic toxicity. Ensure you have the latest version of the guideline from the hospital intranet.

1.4 Duties and Responsibilities

Responsibility

Anaesthetic consultants and trainees undertaking elective and emergency general surgery cases would be expected to be familiar with this Standard Operating Procedure (SOP). Gynaecological surgeons should be familiar with the areas applicable to their practice.

Accountability

Clinicians using this SOP are accountable to their Lead Clinician.

1.5 Associated Documents

Lipid Rescue

1.6 Monitoring / Review of this Procedure

In the event of planned change in the process described within this document or an incident involving the described process within the review cycle, this SOP will be reviewed and revised as necessary to maintain its accuracy and effectiveness.

Training

SOP will be part of staff induction to the operating theatre

1.7 Intranet Classification

Catheters, Analgesia

Equality Impact Assessment Screening Tool

Name of policy/ business or strategic plans/CIP programme: Standard Operational Procedure (SOP) Management of Rectus Sheath Catheters Post Abdominal Surgery	**Details of policy/service/business or strategic plan/CIP programme, etc:** Standard Operational Procedure (SOP) Management of Rectus Sheath Catheters Post Abdominal Surgery	
Does the policy/service/CIP/strategic plan etc affect (please tick) **Patients** **Staff** **Both** [x]		
Does the proposal, service or document affect one group more or less favourable than another on the basis of:	**Yes/No**	**Justification/evidence and data source**
Age	no	
Disability: including learning disability, physical, sensory or mental impairment.	no	
Gender reassignment	no	
Marriage or civil partnership	no	
Pregnancy or maternity	no	
Race	no	
Religion or belief	no	
Sex	no	
Sexual orientation	no	
Human Rights – are there any issues which might affect a person's human rights?		**Justification/evidence and data source**
Right to life	no	
Right to freedom from degrading or humiliating treatment	no	
Right to privacy or family life	no	
Any other of the human rights?	no	
EIA carried out by: Quality assured by: Sarah Thomson (HRBP)	Mo Elmaway Yes	