

# Pfannenstiel Incision

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## Introduction:

The Pfannenstiel Incision derives its name from Hermann Johannes Pfannenstiel (1862–1909), the German gynecologist who invented the technique in 1900. In the UK, the incision was popularized by Monroe Kerr, who first used it in 1911, so in English-speaking countries it is sometimes called the Kerr incision or the Pfannenstiel–Kerr incision. Today, the Pfannenstiel incision is the most used incision for [Caesarian Birth](#) as well as urologic, orthopedic, and pelvic procedures. For urologic procedures such as [Suprapubic Prostatectomy](#) or in some instances of [Ureter Replantation](#), the incision is placed low enough to allow the surgeon to remain outside the peritoneum, in the prevesical (extraperitoneal) space, as described further below.

The major drawback of this incision is its limited exposure beyond the pelvis: if a patient's intra-abdominal pathology is unknown, a vertical midline incision is more appropriate.

Blood supply in the area includes the inferior epigastric vessels, which lie posterior to the rectus muscles, moving more laterally towards the external iliac vessels as they proceed into the pelvis. The superficial epigastric vessels are found just below the skin- when the incision is very wide, they must be dealt with during the skin incision to prevent troublesome bleeding.

The Pfannenstiel incision is reportedly associated with a lower incidence of wound complications, including surgical site infection and incisional hernia, than midline incisions.

In general, the steps of a Pfannenstiel incision are:

- Transverse lower abdominal skin incision
- Dissection through subcutaneous fat
- Anterior rectus sheath division
- Midline opening rectus muscles
- Surgical intervention
- Closure of external oblique layer
- Skin closure

## Steps:

1. The decision to make a Pfannenstiel incision can be surgeon preference, however a variety of operations such as caesarian sections have made

Pfannenstiel incision the standard for that procedure. Regardless of the indication, the degree of access needed for the surgery should be well thought out prior to the time of the operation, as this incision cannot be extended cranially if unexpected pathology is found.

2. Anesthesia can be either General or Spinal depending on the indication for the incision and the overall general condition of the patient.
3. The patient lies in [Supine Position](#), prepared and draped from above the umbilicus to below the perineum. For Cesarean Section a right-handed surgeon stands on the patient's right side. For prostatectomy a right-handed surgeon generally stands on the patient's left.
4. Make an incision is made two fingerbreadths above the symphysis pubis, about 2-3cm medial to the anterior superior iliac spine on both sides.



*A transverse incision is made above the pubic symphysis extending about 2cm medial to the anterior superior iliac spine on both sides.*

5. Using diathermy, the incision is extended through skin, subcutaneous tissue and eventually anterior rectus sheath. Medially, there will be only one layer, the anterior rectus sheath itself. Laterally, if the incision is wide enough (in most cases for Cesarean Section) it will extend into the three layers of the lateral abdominal wall.

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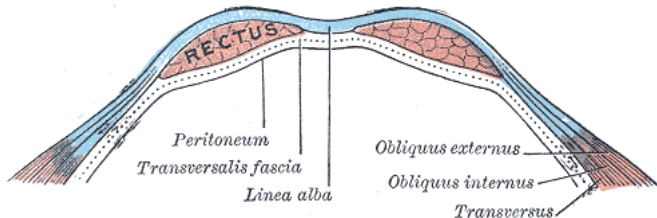
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The anterior rectus sheath is displayed and then divided to expose the bilateral rectus muscles. It is important to clear all of the subcutaneous fat off of the anterior rectus sheath at this time, to make it easier to identify during closure.



Here, Allis clamps are attached to the anterior rectus sheath above both rectus muscles. These are retracted anteriorly by the surgeon on the patient's left. The surgeon on the patient's right bluntly dissects the rectus sheath off the muscles in a superior direction. Next, divide the fascia at the midline.



If wide exposure is required, such as in a Cesarean Section, the incision will go beyond the anterior rectus sheath and into the aponeuroses of the lateral abdominal wall muscles. This will be important to remember when closing the wound, as described below.



This maneuver is repeated inferiorly, with the retraction performed by the surgeon on the patient's right and the dissection by the surgeon on the patient's left. Here, the fascia has been divided at the midline (Black arrow) allowing all of the anterior sheath to be retracted away from the muscles.

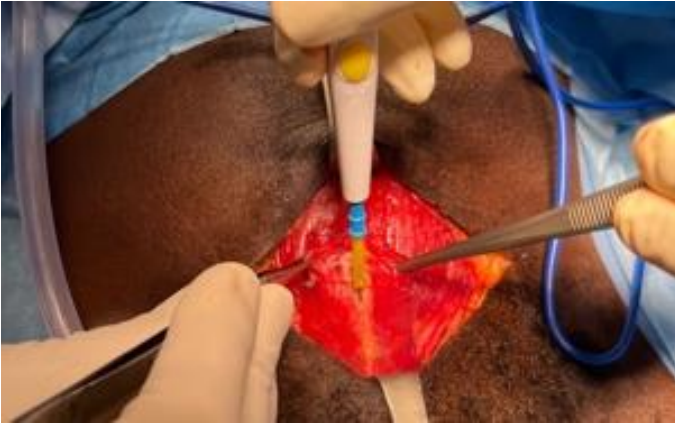
6. The fascia is then separated from the rectus muscles both superiorly and inferiorly by making flaps using both blunt finger dissection and diathermy. Occasionally there will be bleeding from the anterior surface of the rectus muscle during this blunt dissection; this can be controlled with diathermy or application of a small clamp. The midline, the linea alba, requires division with the diathermy or a scalpel blade.

7. Separate the right and left rectus muscles from each other in the midline, taking care to not enter the peritoneum at this step. If you dissect in the true midline between the muscles, you should not have to divide any muscle fibers at all during this step. For certain procedures, entering the peritoneum will be the following step. For others, such as many urologic procedures, the goal is to remain in the preperitoneal space.



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*The surgeon and assistant pull the rectus muscles laterally, exposing and dividing the fascial tissue that joins them at the midline. Try to find the midline and avoid dividing muscle at this point.*



*Once the muscles are free from each other at the midline, they can be gently pulled apart. This reveals the transversalis fascia, with the peritoneum posterior to this in the upper part of the incision. If you intend to enter the peritoneum, do so now. If you do not, gently sweep the peritoneum upwards with a gauze; this maneuver allows you to bluntly enter the prepelvic space.*

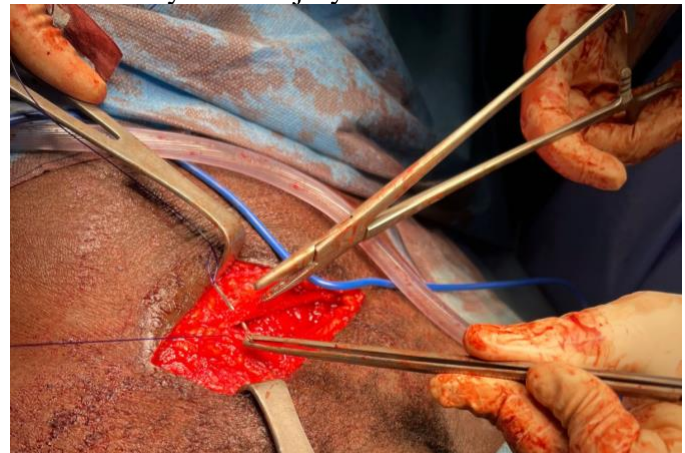
8. Perform the operation in question, using a self-retaining retractor such as the Balfour abdominal retractor to hold the rectus muscles laterally. For Cesarean Section, this retractor with a removeable bladder blade is very commonly used.
9. For closure of the incision, sutures may be placed in the rectus muscles to reapproximate them at the midline, however this step is not routinely done. Similarly, it is not necessary to close the peritoneum if it has been opened.
10. Start closure by bringing together the external oblique layer. Use a non-absorbable or slowly absorbable monofilament suture. If your incision was wider than the rectus sheath only, as

described above in Step 5, take care to only grab the external oblique layer. Avoid placing deeper sutures or performing “mass” closure of all three layers of the lateral abdominal wall. This maneuver risks causing a nerve injury to the ilioinguinal nerve, which passes between the external and internal oblique layers. This can lead to chronic pain.



*Here, suturing lateral to the rectus sheath, the surgeon is being careful to only suture the external oblique muscle and not the muscles beneath it.*

11. Continue to close the external oblique layer with the running suture, taking care on both sides to only suture the external oblique aponeurosis to avoid any nerve injury.



*Running monofilament suture reapproximating the external oblique aponeurosis*

12. Finally close the skin incision with a running subcuticular absorbable suture.

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## Pitfalls

- It is important to not inadvertently enter the peritoneum if you intend to operate in the preperitoneal space. If you do enter it, there may be troublesome herniation of small intestine into the field you are trying to operate in, especially if the patient is awake under spinal anesthesia. The best way to avoid this pitfall is by cautious separation of the rectus muscles and not applying the diathermy beyond where you are dissecting. If you do enter the peritoneum, close it with an absorbable suture.
- Initial dissection and clearing of the external oblique aponeurosis will make closure easier and will allow visualization and closure of only the external oblique layer with better chance of avoiding any inadvertent nerve injury.
- If there is unexpected mid- or upper-abdominal pathology, or need for rapid exposure as with uterine rupture, this incision can be extended laterally and the rectus sheath dissection extended further cranially and caudally. If this does not provide enough exposure, connect a lower midline incision to this one: this is called an “Inverted T” incision.

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