

Pilates for hernias

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Abstract

Hernias in the abdominal wall are a common phenomenon, having a prevalence of 1.7% across the general population and 4% in for people over 45 years and more often present in men than in women. Hernias occur due to a combination of weakness in the musculature of the trunk and increased pressure, causing internal organs and tissue may protrude through the weak spot. Left unchecked in adults, hernias will not heal by themselves and are likely to grow over time. This paper aims to review the anatomy of a hernia and how a Pilates conditioning programme can support clients with a hernia who are cleared to exercise by their physicians.

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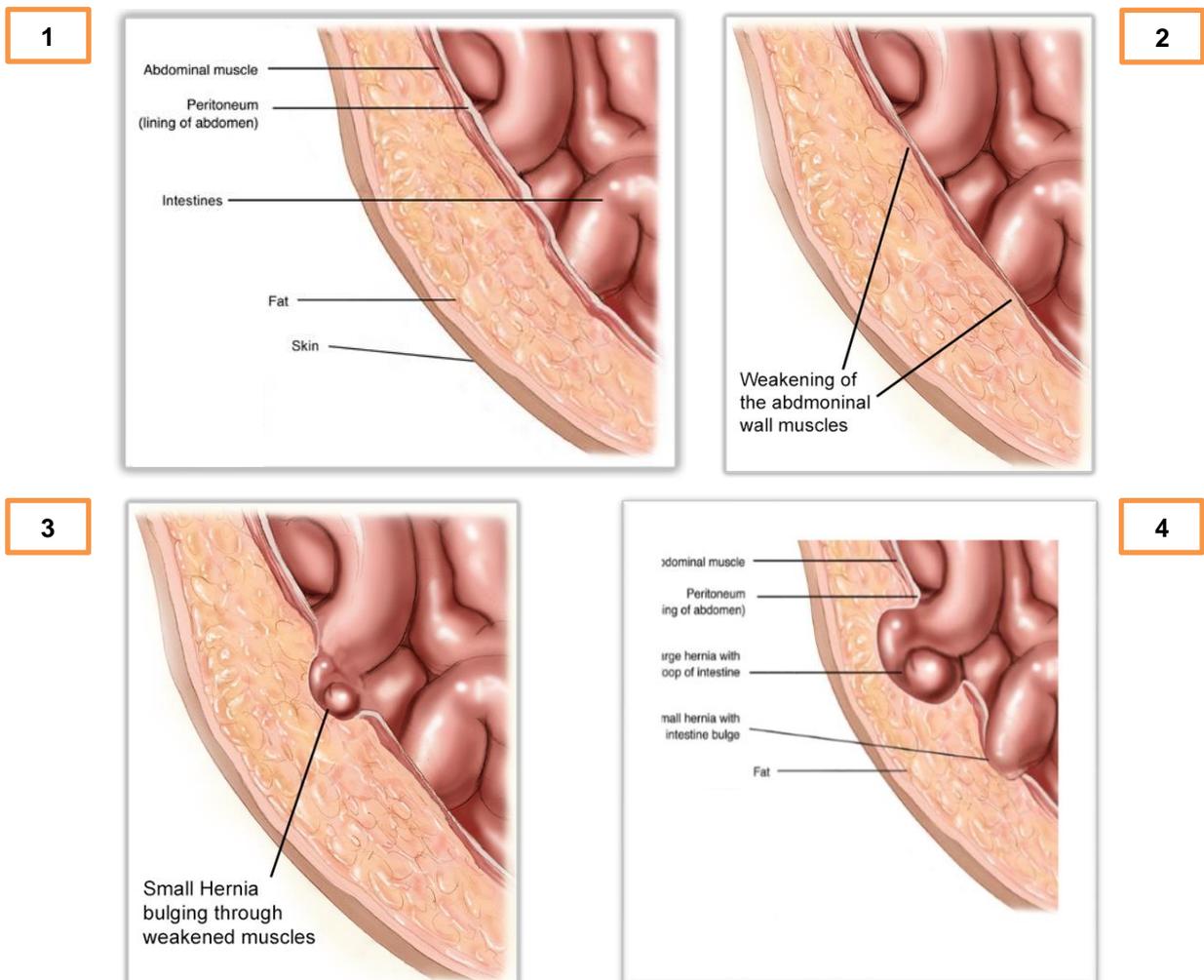
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Anatomical Description

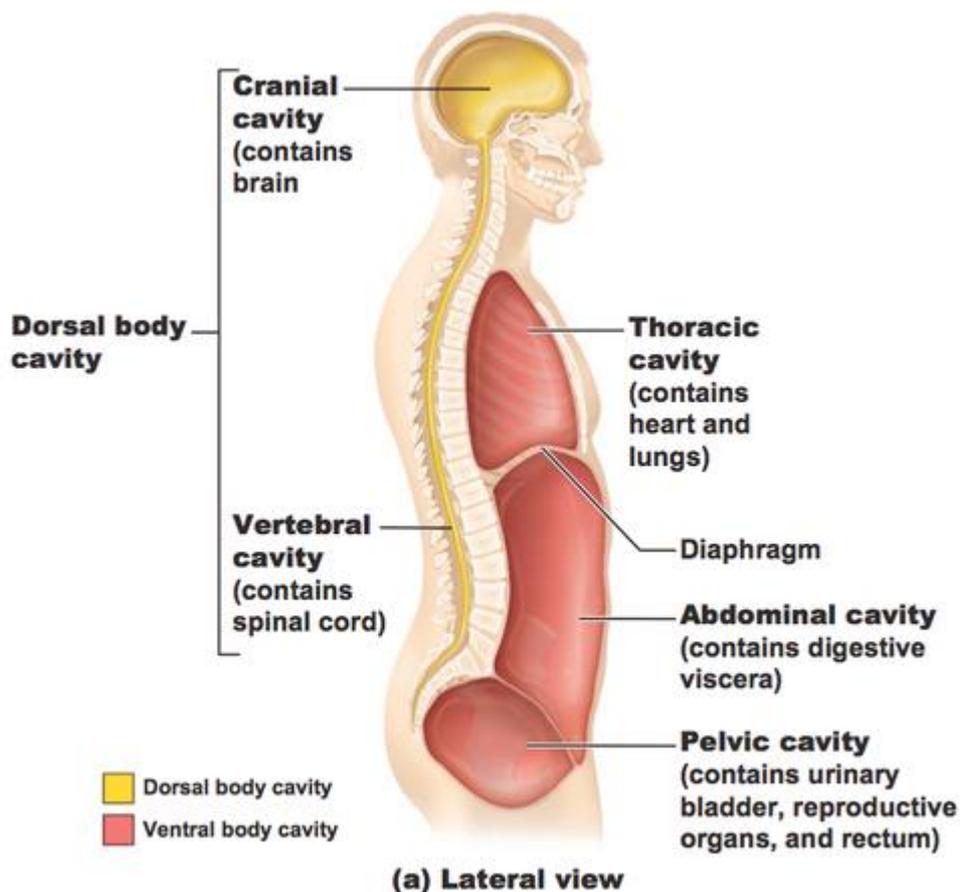
A hernia is caused by a combination of pressure together with weakness in the muscle and/or fascia, resulting in organ or tissue protruding through the opening or weak spot. Weakness in the abdominal wall muscles can present at a young age or at birth but will more often occur later in life. They can also occur at the site of an incision of a muscle, often due to surgery.

Any activity that causes increased pressure in the abdominal area can cause hernias: examples include lifting heavy objects, diarrhoea, constipation and coughing or sneezing. Poor breathing mechanics can also contribute to increased pressure in the abdominal area and can both contribute to hernia formation as well as potentially slow recovery.

To better understand what happens to a body when a hernia forms, it is important to look at the anatomy of the trunk. The figure below shows how at the site of muscle weakness, internal organs progressively push through the peritoneum – the abdominal lining – and muscle into the layer of fat under the skin.



Different types of hernia are categorised based on their location in the body. The trunk of the body broadly has three main cavities, thoracic – above the diaphragm, abdominal and pelvic – separated by the superior aperture of the pelvis. Hernias most commonly occur at sites where an opening in the muscle exists (or existed) and where pressure during activity is high.



The diaphragm, which is the principal muscle of inspiration, has a small opening – hiatus, through which the esophagus passes, connecting through to the stomach. When a hernia occurs here, the upper part of the stomach protrudes through the diaphragm, this is known as a hiatus/hiatal or epigastric hernia.

The abdominal wall consists of four paired muscles that span the area between the ribs and pelvis.

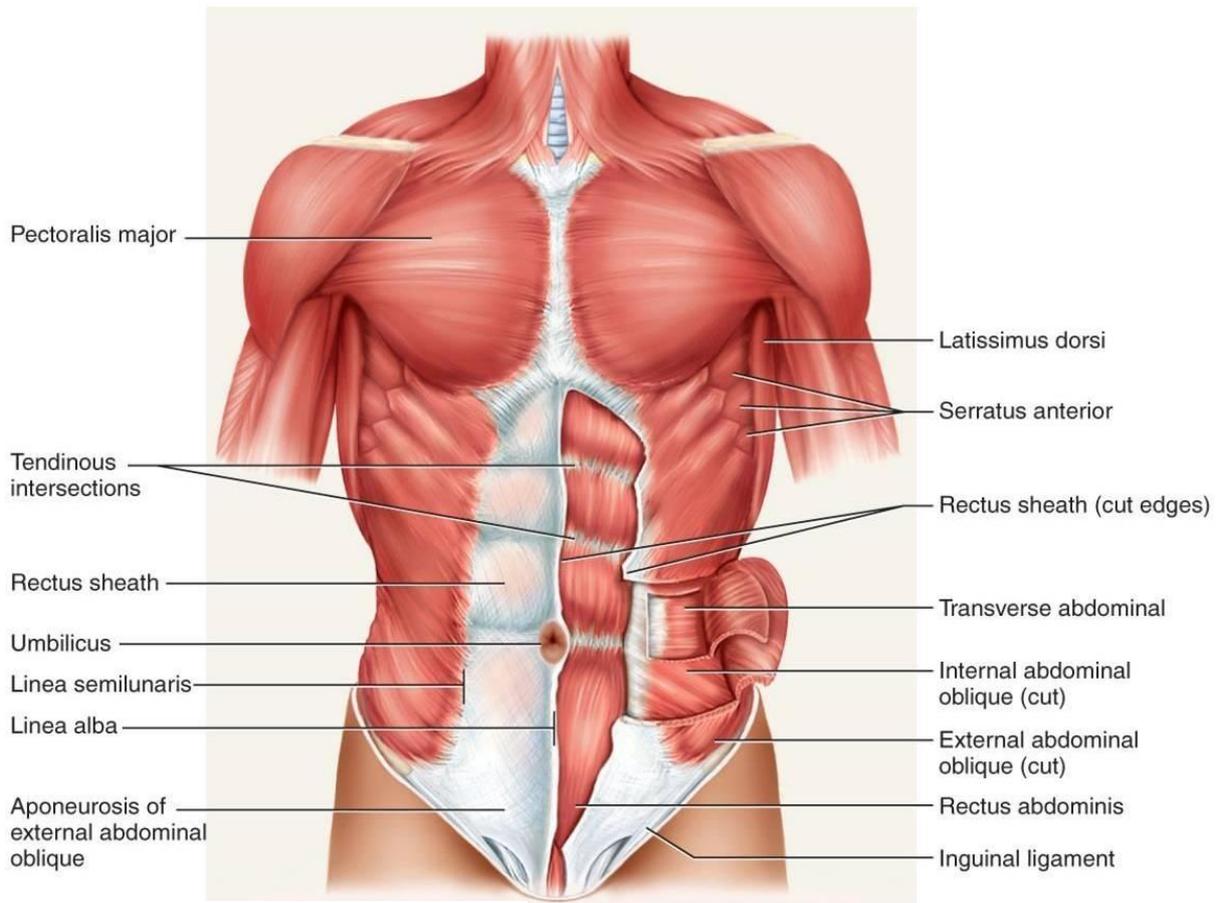
The transversus abdominis is the deepest of these and attaches from lower ribs, to the inguinal ligament and iliac crest and the lumbar vertebrae, and reduces the diameter of the abdomen on contraction, the internal obliques, also attach to the bottom ribs and iliac crest as well as the lumbodorsal fascia. This muscle lies above the transversus abdominis and acts to bend the body

sideways, rotate the spine and ribcage and assists trunk flexion. The external oblique attaches to the ribs, intertwining fibres with the serratus anterior, and the ilioinguinal ligament. It forms an aponeurosis ending at the linea alba and inguinal ligament, acting to bend the body sideways, rotate the spine and support trunk flexion. The rectus abdominis runs from the pubic symphysis to the xiphoid process and flexes the trunk.

Paraumbilical (indirect umbilical) hernias occur at an area of weakness around the umbilicus (often above or below) where the umbilical cord would have passed and are most common type of umbilical hernia in adults. Direct umbilical hernias occur at the umbilicus and often present in infants (where these will tend to self-heal). Around 10% of abdominal wall hernias are umbilical.

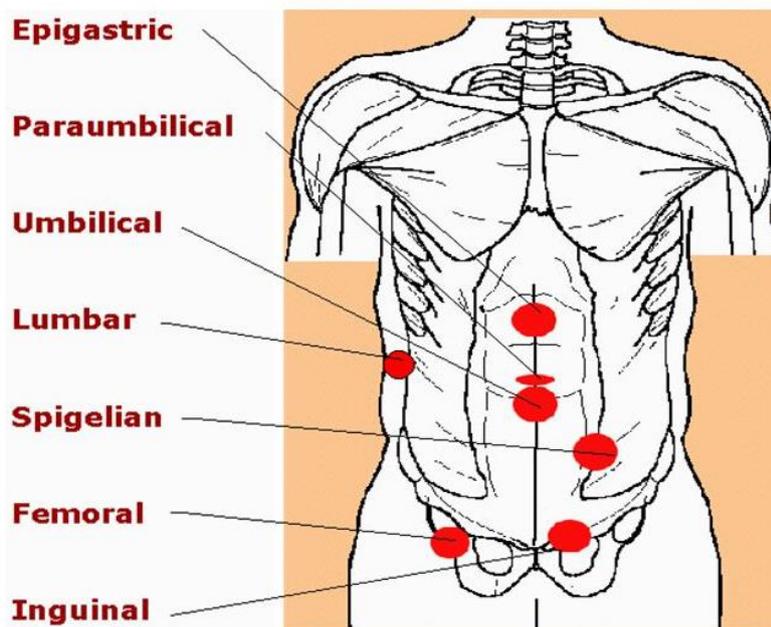
Inguinal canals in the abdominal wall that convey the spermatic cords or ligament of the uterus are the site of inguinal hernias. Inguinal hernias are the most common type of hernia, with 75% of all hernias being of this type. They occur in both men and women but are much more common in men (97% of all cases) The intestine or bladder will protrude into the inguinal canal in the groin. A hole forms in the internal oblique and transversus abdominis.

Rarer types of hernia are femoral – in the canal carrying the femoral artery into the upper thigh. Spigelian – through the Spigelian fascia, the layer between the rectus abdominis muscle and linea semilunaris on either side of the rectus abdominis, and lumbar – in the lumbar triangle.



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Common locations of Abdominal Hernias



Hernias can also occur at other sites, where for example where there has been an incision due to surgery (Incisional hernia). Weakness occurs because even with the most optimal repair techniques during surgery, muscles are never as strong as prior to the surgery. Over time, the muscles can pull apart causing an incisional hernia.

Sports hernias typically occur due to a muscle tear where muscles join the pubic bone. Pain is often worse with activity such as sitting and pulling legs into the body and can occur in any individual – not just athletes. It is an atypical hernia, in the sense that no tissue protrudes from the tear or weakened area.

Symptoms vary dramatically and include bulging underneath the skin at the site of the hernia, acute pain, chronic pain where a hernia develops slowly over time, referred pain or even strangulation.

Treatment options include monitoring where there is no pain, wearing a hernia truss or belt to manage symptoms, or surgery. Hernias do not heal by themselves and will most likely need surgery at some point of time.

Case Study

My client is a 48-year-old male (Client A), presents with early stage umbilical hernia. He is normally active and runs, plays tennis and golf. However, he is new to Pilates. He also has a desk job, travels for work, and primarily exercises in the weekend.

He presents with abdominal weakness and finds it difficult to connect with the deep abdominal muscles. Upon initial assessment he also has rounded shoulders, tight chest and forward head, likely due to prolonged periods of sitting and frequent travel.

As the client has never done Pilates before, I devised a fundamental programme to as a starting point, with focus in every session on set up, breathing mechanics and connection with the deep abdominal muscles. The main objectives of the programme are to strengthen the all of core muscles, in particular those that form the abdominal wall and pelvic floor, improve posture and work on proprioception.

Another key focus area is breathing with the aim to lower abdominal pressure during activity. The programme should avoid exercises that increase abdominal pressure combined with straining such as abdominal crunches and overhead presses and avoid movements that could increase the hernia (such as roll over)

Pilates Programme

Set up: the first 10 sessions started with exercises to set the core and focus on breathing

Warm Up: modified supine twist to keep at least one foot on the floor. Chest lift and Chest lift with rotation substituted for Leg lifts (working up to changes as strength improves)

Footwork: Reformer footwork to minimise abdominal pressure, focus on engagement of the stabilising muscles and hip stability

Abdominal work: Tilt and flat back, with focus on trunk stability ensuring that ribs do not flare.

Hip work – single leg to so that one leg is always supporting on the surface, helping to lower abdominal pressure, focus on stability of the hips

Spinal articulation – after first 10 sessions bottom lift to encourage stability of the trunk and engagement of hamstrings and glutes

Stretches – Ladder barrel hamstrings and Glutes and shoulder stretch 1 and 2 to open the shoulders

FB1 – from session 10 onwards Thigh stretch with Roll up bar with focus on trunk and shoulder stabilisation control of the abdominal muscles

Arms – Standing arm series on the Cadillac to minimise pressure, focus on trunk stability, pelvic positioning

FB2 – none in this programme, possibly add another FB1 as the client improves strength, working up to back support prep

Legs – gluteals side lying series, gluteals kneeling series to increase glute work, focus on stabilising the trunk in quadruped position

LF/R – Side stretch on chair – focus on connecting with the obliques

Back extension – fundamental back extension in the first sessions focus on abdominal engagement and connecting with the mid back, working up to by prone 1

Block	Week 1-4	Week 5-8	Week 9-12
Warm Up	Pelvic Curl Modified Supine Twist Leg Lifts	Pelvic Curl Modified Supine Twist Leg Lifts	Pelvic Curl Modified Supine Twist Leg Lifts Changes
Footwork	Reformer footwork	Reformer footwork	Reformer footwork
Abdominal work		Short Box Flat back and Tilt	Short Box: Flat back and Tilt
Hip Work	Supine single leg series	Supine single leg series	Supine single leg series
Spinal Articulation	None to session 10	None to session 10	Bottom lift from session 10
Stretches	Hamstrings, Glutes, Shoulder stretch 1&2	Hamstrings, Glutes, Shoulder stretch 1&2	Hamstrings, Glutes, Shoulder stretch 1&2
FB1			Thigh stretch RUB
Arm work	Arms standing series	Arms standing series	Arms standing series
FB2			
Leg work	Gluteals side lying series	Gluteals kneeling series	Gluteals kneeling series
Lateral flexion/Rotation	Side stretch	Side stretch	Side stretch
Back Extension	Back extension	Back extension	Prone 1

Conclusion

Client A was very happy with the result of his conditioning programme over the course of three months. He is now able to find a neutral pelvis and maintain the position during the work as well as actively recruit the deep abdominal muscles to stabilise the core during exercises. He has really focussed on improving breathing mechanics and is able to breathe through exercises, lowering abdominal pressure during activity.

Further assessment of the hernia demonstrated no increase in the size of the hernia. In addition to this, flexibility in the hamstrings and chest area has also improved, allowing the client to improve performance in his other sporting activities. This has motivated him to continue Pilates sessions.

Bibliography

Isacowitz, Rael. Study Guide: Comprehensive Course. Costa Mesa, California: Body Arts and Science International, 2013

Calais-Germain, Blandine. Anatomy of Movement, Eastland Press, 2007

Isacowitz, Rael. Pilates, Second Edition, 2014

Isacowitz, Rael and Clippinger, Karen. Pilates Anatomy, 2011

[“Hernia – What Is It?”](#) Harvard University Medical School, Feb 2019

[“Understanding Hernia – the Basics”](#) webMD, 22 Jul 2017

[“Inguinal hernias”](#) US National Library of Medicine, National Institutes of Health, 2 Feb 2008

[“Spigelian Hernias: Causes, Symptoms & Treatments”](#) Global Treatment Services, 16 Jan 2018

[“Types of hernias”](#) California Hernia Specialists

[“Hernia anatomy”](#) California Hernia Specialists

[“Exercises”](#) the hernia bible

[“Can I exercise with a hernia?”](#) Livestrong, 28 May 2019

[“Pilates after hernia repair”](#) Lynda Lippin, 9 Feb 2019

[“Abdominal separation, pelvic floor weakness and hernias, they are all connected!”](#) Claire Mockridge,

Jan 2017