



Case study

Absence of pyramidalis muscle – a case study

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Pyramidalis muscle is often considered as rudimentary muscle in the human body. It is the muscle present in the rectus sheath at the anterior abdominal wall. During the dissection of male cadaver, there was absence of pyramidalis muscle on both the sides in the rectus sheath which covers the rectus abdominal muscle at the anterior abdominal wall. The arrangement of the other muscles in the anterior abdominal wall was normal. The pyramidalis is having less functional significance. There may not be any functional deformity of the rectus sheath or other related structures. Pyramidalis performs the function of tensing the linea alba. This muscle is variable muscle due to its percentage of absence in the human beings. Its presence in the body is also having some variations. Especially surgeons should be aware of different variations of this muscle.

Keywords: Pyramidalis, Rectus sheath, Rudimentary muscle, Variable muscle.**INTRODUCTION**

The pyramidalis is a small, paired, and triangular muscle, anterior to the rectus abdominis, and contained in the rectus sheath. It lies between the anterior surface of the rectus abdominis and the posterior surface of the rectus sheath. It is rudimentary muscle in human beings. It is attached to the front of the pubis and to the ligamentous fibres in front of the pubic symphysis. The muscle diminishes in size as it passes upwards, and ends in appointed extremity which is attached to the linea alba usually midway between umbilicus and pubis but sometimes higher [1].

Origin

It arises from anterior surface of the body of the pubis.2

Insertion

Its fibres pass upwards and medially to insert in to linea alba. 2

Nerve supply

It is supplied by the subcostal nerve (T12) 2 Blood supply –

Superior and inferior epigastric arteries. Action –

It is said to be the tensor of the linea alba, but the need for such action is not clear. 2

Variations

The pyramidalis muscle is absent in about 20% of people. This muscle may be absent on one or both sides. The lower end of the rectus then becomes proportionately increased in size.

Occasionally it is double on one side, and the muscles of the two sides are sometimes of unequal size. It may also extend higher than the usual level. 3 [2].

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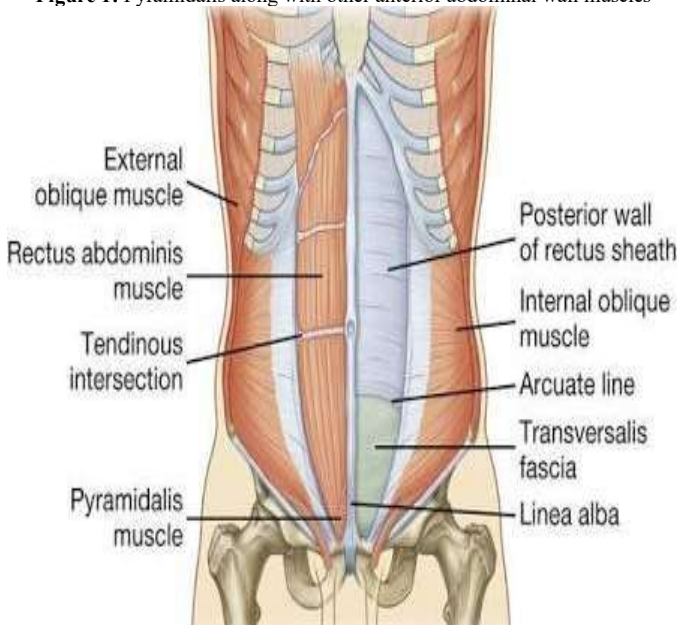
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Figure 1: Pyramidalis along with other anterior abdominal wall muscles

**CASE STUDY**

During the routine dissection for undergraduate students at Dr. J. J. Magdum Ayurved medical College, Jaysingpur, Maharashtra, India, there was absence of pyramidalis muscle on both sides in rectus sheath in a male cadaver. Arrangements of other anterior abdominal wall muscles were found normal.

Figure 2: Absence of pyramidalis muscle

**Exercises of pyramidalis muscle**

The pyramidalis is a little-known muscle in the lower abdomen. Not everyone even has this muscle, and the sides of this muscle are sometimes uneven in the people who do have them. The pyramidalis gets its name from its triangular shape. Pyramidalis muscle is on top of the rectus abdominis, or six-pack muscle, and contracts when performing some exercises that target the rectus abdominis.

Abs machine exercise

The pyramidalis activates during exercises that work the rectus abdominis, particularly the lower part of the rectus abdominis. When using an abs machine to target this muscle, use one that allows to crunch by moving your upper and lower body for the best results. Some abs machines only work as bending the upper body forward to flex the spine, but the seated hip raise crunch machine allows for raising the knees toward the shoulders too. To use this machine, sit with the back against the pad, grip the handles near to head and secure the front of ankles against the footrests. Simultaneously raise the knees and bend forward to do a crunch.

Pull-up bar exercise

A pull-up bar is another piece of gym equipment useful for targeting the pyramidalis and the lower abs. Hanging leg raises work for abs through flexing the lower part of the spine upward as individuals hang from the bar. To perform a basic hanging leg raise, hang from the bar with the palms facing forward, and then bend the knees and raise them towards the ceiling as you tighten your abs. One can bring the knees to the waist to do the basic hanging leg raise, or bring the knees to chest or even chin level, depending on the individual's strength. It is more important to do the exercise without using momentum by swinging than it is to get the knees higher [6].

Floor exercise

The simplest way to strengthen the pyramidalis and lower rectus abdominis is to exercise on the floor without equipment. One can always hold a medicine ball or dumbbell to make these exercises more challenging, but for simplicity and the least strain on the abs, perform exercises on the floor. An example is the lying reverse abdominal crunches. To begin, lie face up with the hands under the lower back and make the legs straight. Next, lift the head as one bends the knees toward the chest and lift the buttocks an inch off the floor.

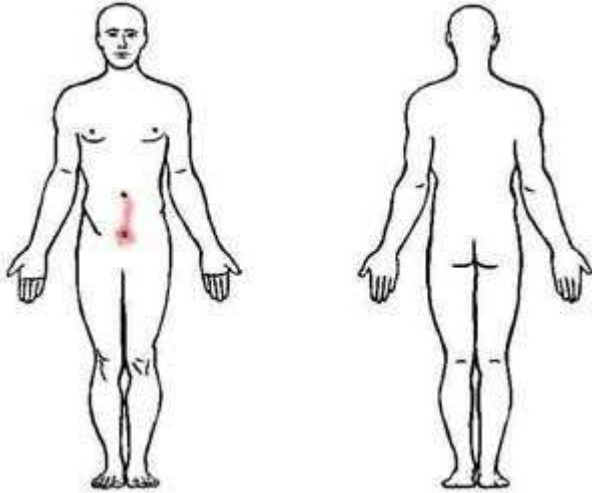
Pyramidalis trigger point

The pyramidalis muscle has one trigger point that is responsible for pain in the trunk, which travels from the trigger point by the pubic crest upwards towards the navel. The image below shows the referred pain extends from the trigger point as abdominal and lowers abdominal pain.

People often create the trigger work when straining while working out. People try and increase their core strength and work on their six packs.

The exertion and strain causes tears and injuries to the muscle leading to the trigger point [5].

Figure 3: Pyramidalis Trigger point



DISCUSSION

Pyramidalis acts as tensor of the linea alba. It is considered functionally less important. Pyramidalis is absent in about 20% of cases. Sometimes the pyramidalis is present on one side of the body but not the other. In other cases, there are two pyramidalis on one side, with the doubled muscles often being unequal in size. Many scientists believe that this muscle is left over from the days of humans being similar to marsupials containing pouches, and as such, has lost most of its function in the process of evolution. The absence of pyramidalis muscle is reported in 14.8% of subjects. It is also reported agensis of pyramidalis muscle in 8.33% of cases^{6, 7}, the absence signifies its minor role in tensing linea alba.

While making the longitudinal incision for a classical caesarean section the pyramidalis is used to determine midline and location of the linea alba^[6, 7].

CONCLUSION

Pyramidalis is variable and rudimentary muscle in the rectus sheath anterior to the rectus abdominis muscle. This muscle is found absent with rate of about 20%. The presence of this muscle is

also variable. So, before taking the various incisions for the surgeries which are related to the anterior abdominal wall, it is necessary for the surgeons to have the information about the variations of pyramidalis muscle.

Declaration of interest

The authors declare that there is no conflict of interest.

ACKNOWLEDGMENT

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