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**Coccyx Pain and Treatment
Part One**

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Coccyx area pain can be constant and severe. This is one of the conditions that more people from far away places have contacted me for advice and treatment. It commonly results from a traumatic onset such as a fall, prolonged and repeated pressure to the area from sitting (improper position or hard surface chair), or a direct blow from a sports injury. Some Mom's present with coccyx area pain after childbirth. During the last trimester of childbirth, the coccyx becomes more mobile, allowing for greater multidirectional movements. In my patients who have presented with a history of trauma, I have not seen many overt coccyx fractures on x-ray, but I suspect bone bruising and micro-fractures (not seen on x-rays). X-ray can help determine dislocation at the sacrococcygeal joint (usually an anterior coccyx) causing significant pain and discomfort during sitting, sitting-to-standing, and even walking. Any trauma or repetitive irritation can cause damage to the attached musculoligamentous tissues with an inflammatory response, periostitis and eventual osteoarthritis of the sacrococcygeal joint.

ANATOMY: I frequently find the sacrococcygeal area tender and the surrounding tissue boggy or swollen. Palpation and visualization of the surrounding anatomy is important. The coccyx is composed of approximately 3 to 5 individual segments or coccygeal vertebrae. Its orientation varies with its mobility, but generally the pelvic surface faces supero-anteriorly and the dorsal surface postero-inferiorly.

The coccyx gives attachment to the **intercornual ligaments, superficial posterior sacro-coccygeal ligament, sacrotuberous and sacrospinous ligaments**. Key muscle attachments are the **coccygeus, levator ani (anteriorly) and gluteus maximus muscles**. Going from bone to the surface and medial to lateral, we have:

The **intercornual ligaments** are bands connecting the sacral and coccygeal cornua on each side. The sacral cornua are also connected to the coccygeal transverse process by a ligamentous fascicle.

The **superficial posterior sacro-coccygeal ligament** is a flat band passing from the margins of the sacral hiatus to the dorsal surface of the coccyx, completing the roof of the lower sacral canal.

The **sacrospinous ligament** is a thin, triangular ligament located deep to the sacrotuberous ligament with which it blends medially. The fibers pass laterally from its broad attachment to the lateral margins of the lower sacral and upper coccygeal segments and converge to the apex to attach to the ischial spine. Its anterior surface is muscular, constituting coccygeus, while the posterior surface is ligamentous. The ligament forms the inferior margin of the greater sciatic foramen and the superior margin of the lesser sciatic foramen.

The **sacrotuberous ligament** is a flat, triangular band. Its base attaches to the posterior border of the ilium, and blends with the short and long posterior sacroiliac ligaments, the lower sacral transverse tubercles and lateral margins of the lower sacrum and upper coccyx. Its fibers pass obliquely converging laterally to a narrow thick band, which widens slightly before attaching to the medial margin of the ischial tuberosity. The lower fibers twist upon themselves, spreading along the superior margin of the ischial ramus as the 'falciform ligament'. To the posterior aspect of the ligament are attached the lower fibers of gluteus maximus, while the most superficial fibers of the lower part are continuous with the tendon of the long head of biceps femoris. Coccygeal branches of the inferior gluteal artery, the perforating cutaneous nerve and branches of the coccygeal plexus all pierce the ligament.

Levator ani inserts on the anterior coccyx and is sometimes considered as several separate muscle parts, including the coccygeus, iliococcygeus, and pubococcygeus muscles. **Coccygeus** (ischiococcygeus) is a flat triangular musculotendinous sheet that arises from the apex of the pelvic surface, the tip of the ischial spine and the pelvic surface of the sacrospinous ligament. The base is attached to the lateral margins of the coccyx and the fifth sacral spinal cord segment. It fuses to the ventral surface of the sacrospinous ligament and lies posterior to, but in the same plane, as levator ani. **Coccygeus** is supplied by a branch of the sacral plexus, derived from the ventral rami of S3 and S4. *The coccygeus muscle with levator ani forms the majority of the pelvic diaphragm, which supports the pelvic viscera and maintains intra-abdominal pressure.* When the **coccygeus** and the **levator ani** contract with the muscles of the abdominal wall they help to raise intra-abdominal pressure in such processes as coughing, vomiting and forced expiration. They can also become involved in inspiration during quiet respiration; it also pulls the coccyx forwards following defecation and parturition.

The **iliococcygeus** and **pubococcygeus** support and slightly raise the floor of the pelvis, resist intrabdominal pressure, as in forced expiration. Pelvic floor stability (preventing inferior sagging of the intrapelvic contents), maintaining urinary and fecal continence, and diaphragmatic breathing continue to be hot topics for those interested in rehab and sports performance. These are often overlooked areas for chronic pain patients. Because the muscles originating on the posterior coccyx include the gluteus maximus and strands of biceps femoris,

which is often continuous with the sacrotuberous ligaments, it is important to at least examine this area.

Typical symptoms:

severe localized pain in the coccyx region
visible redness, bruising, and swelling in the coccyx region
pain and/or difficulty upon sitting and/or direct pressure to the coccyx
pain moving from sitting to standing
pain during bowel movements or straining
pain with urination
PMS
bed wetting
breathing changes
pain or problems with sex or during sexual intercourse

Conditions to rule out with coccyx area pain include: Cauda Equina Syndrome; Lumbar Zygapophyseal Joint Pain; Maigne Syndrome; Piriformis Syndrome; Lower Cross Syndrome; Muscle imbalance syndromes; Spinal Cord Tethering; Sacroiliac Joint Dysfunction; Spinal Stenosis.

In Part Two I will discuss treatment for Coccyx area pain.