

Coxarthrosis: a proposal to avoid prosthesis

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Coxarthrosis is by definition the arthrosis of the hip joint.

Arthrosis is a pathology that determines initial suffering, followed by the usury of the cartilage covering the proximal epiphysis of femur and acetabulum and the subchondral bone of the two components and later the also the cartilage of pericapsular elements such as muscles, tendons and ligaments.

Coxarthrosis is generally divided into two variations:

- primitive/idiopathic/essential coxarthrosis, when its causes are unknown;
- secondary coxarthrosis, when it is a consequence of morphological alterations of different components that, over the time, cause modifications in the joint function and in its weight load, provoking a premature usury of the joint itself.

The most common variations of secondary coxarthrosis are dysplasia congenital in all its acetabular femoral and mixed forms, young age forms, after-effects of pelvis traumas, femur fractures, acetabular fractures, dislocations, the result of osteochondrosis in young people, and of joint infections.

The essential causes are much more frequent, in proportion of almost 1:3. This means that there is a big group of pathologies whose origin is completely unknown. During the last years, hip degenerative condition has gained a huge social importance. On one hand, it is due to the funds our society had to invest on its treatment. On the other, because of its diffusion among young people, who become partially or even totally unable to work in this condition.

Although a big part of the problem has been solved thanks to arthroprosthesis, especially in old people, many difficulties are still being faced in young subject, particularly in the first phases of the pathology, when it is too early to intervene both with surgery and prosthesis.

The current therapeutic possibilities are: trophic drugs for cartilage such as hyaluronic acid, whose effects are still to be verified, cartilage grafts – very used today to treat small and light damages, and arthroscopy of the hip joint – a recent technique that still needs to be codified.

The idea of coxarthrosis prevention is still very abstract, exception made for weight control and reduction of heavy work in case of illness. The general tendency is however to be a bit more fatalist with this pathology and just to wait how things will evolve.

In conclusion, it is not clear how pain develops in coxarthrosis, since there are cases with asymptomatic x-ray results and a good life quality, and other cases with the x-ray showing some symptoms of pathology and a very bad life quality.

HIP BALANCE AND STABILITY

It is necessary to speak about some crucial points.

What are the causes of the frequent essential coxarthrosis? Which treatment allows young patients to live a medium-quality life and can be continued in the long period without causing any damages and preventing the patients from undergoing surgery? Which preventive treatment can be done on an asymptomatic patient? Which are the causes of pain in coxarthrosis? Once we found them, can pain be fight by acting directly on the cause?

An answer to all these questions can come from an exhaustive study of the systems of hip balance and stability. They are made up of the soft pericapsular and muscular structures (Fig.1 – Chart 1).

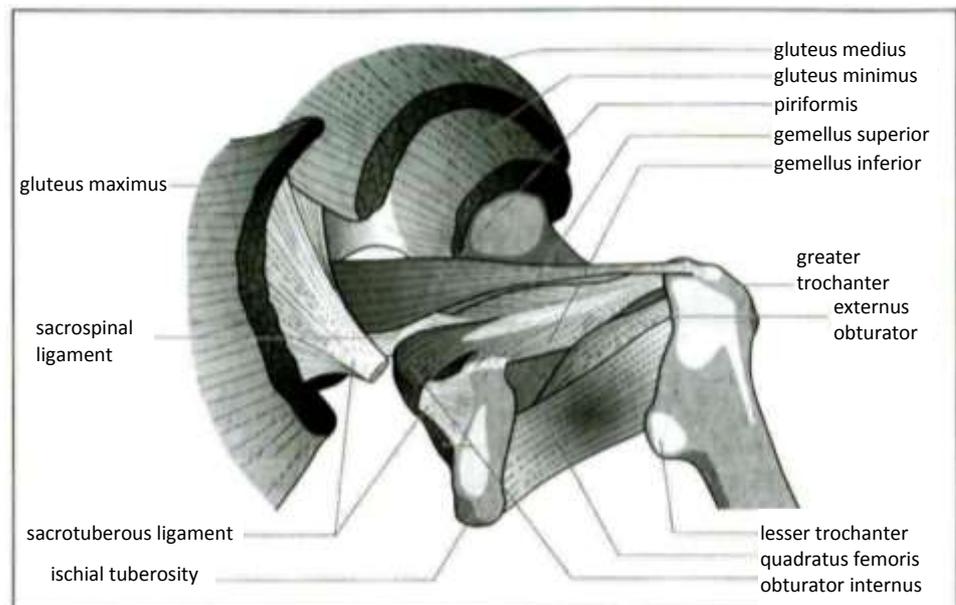


Figure 1

By removing the gluteus muscles, it is possible to observe the hip joint in a posterior projection: the obturator and the gemellus muscles insert on the greater trochanter of the femur and this is why they can make the hip rotate externally.

FLEXORS	ADDUCTORS
psoas and iliac	great adductor
Sartorius	internal rectus
anterior rectus	semimembranosus
tensor fasciae latae	gluteus maximus
pectineus	quadratus femoris
adductor medius	pectineus
rectus internus	internal obturator
	external obturator
	adductor medius
	adductor minimus
	internal rectus
EXTENSORS	EXTERNAL ROTATORS
gluteus maximus	piriformis
biceps femoris	internal obturator
semitendinosus	external obturator
semimembranosus	quadratus femoris
	pectineus
ABDUCTORS	
gluteus medius	gluteus maximus
tensor fasciae latae	gluteus medius
gluteus maximus (the most elevate fibers)	
piriformis	

Chart 1

Pericapsular muscular structures and also the muscles that are distant from the joints, thanks to muscular chains system, play an important role in controlling articular heads pressures. When a muscle gets shorter, and it is very frequent due to lack of training, wrong postures, anxiety and psychophysical tension, it determines compression forces on cartilaginous and skeletal elements of capsular structures. This kind of mechanism is quite intuitive for muscles inserting on the skeletal elements of the interested joint, such as gluteus, iliopsoas, or the rotator muscles. It is less obvious for the distant muscles that can make pressure loads on joints as well through the muscular chain system. An example can be the diaphragm, which through its pillars reaches the lumbar region, close to psoas, with which it forms a unique and functional arm. Therefore, pathologies creating diaphragm tension and contraction through the psoas muscle could affect coxofemoral joints, too.

It is than possible that muscular tensions can create a constant increase of intra-articular pression, causing over the time cartilage damages, the first step of a arthrosic degenerative framework. This hypothesis would explain the reason of many cases of coxarthrosis with unknown cause (idiopathic and primitive), and why a coxarthrosis with bones damages could result highly painful or vice versa. In

conclusion, it would help us to create a real preventive treatment acting on the causes and an atraumatic treatment for young patients allowing them to go back to work.

OPERATING PROPOSAL

The hypothesis of treatment is to work by stretching the directly involved muscles, but especially to work on the muscular chains in general by acting through a global non-compensated muscular stretching. This technique consists in executing stretching exercises through the system of the muscular chains avoiding the muscular skeleto-articular antalgic compensations during the stretching phase. We are talking about an operating proposal that, through a combined work between doctor and physiotherapist, allows the execution of optimal exercises for any level of pathology.

POSTURAL GLOBAL WORK

The first exercise is based on a postural global work, as you can see in figure 2. The used tool, Pancafit®, allows varying the working angles depending on the conditions of the subject. In this way, it is possible to act on the posterior muscular chain. The proposed exercises start from the feet, always keeping a correct posture. Frequently, exercises involving feet give a huge contribution both to hip mobility and in reducing the pain (figure 3). The next step is to do myofascial and connective massages both superficial and deep, in order to give back the muscles more freedom. In this way, muscle and the sarcomeres fixed in the connective tissue are more suitable for recovering their original length when they undergo a global non-compensated stretching in a correct posture.

All the muscles involved in hip functionality are taken into consideration and treated (figures 4-7).



Figure 2 Thanks to the used tool, it is possible to vary the working angles according to any need and subject's conditions.



Figure 3 It is a good idea to start working on the feet: very often feet exercises play an important role in giving mobility to the hips and in reducing the pain.

During the following sessions, the work is increased in order to free hips from coaptation. Infra-articular coaptation refers to a compression of one articular head against another one.

The forces generated by flexor or extensor muscles, depending on the lever, are downloaded inside the joint and a part becomes useful force to generate movement.



Figure 4 In order to avoid compensations, the interested area is treated with myofascial and connective massages, both superficial and deep. This will give more freedom to fasciae, muscles, and sarcomeres fixed by connective tissue.



Figure 5 The same treatment is done on the gluteus.



Figure 6 It is important to verify the condition of pyramidalis muscle and, if it results very tense, to treat it.



Figure 7 The same intervention has to be done on adductor muscles, which are often responsible for strong retractions.

Exercises like the ones showed in figures 8-10 are executed. The therapist always works in a correct and global posture on a non-compensated stretching of the rotatory muscles of the hips, of adductor and abductor, flexor and extensor muscles.



Figure 8 Non-compensated stretching of hips internal rotators muscles.



Figure 9 Non-compensated stretching of hips adductor and abductor muscles.



Figure 10 Decompensated stretching of hips flexor and extensor muscles.

Any detail has to be controlled, for instance the sacrum must lean against the seatback of Pancafit®, the breathing must be unblocked in order to avoid diaphragm and lumbar lordosis, the anterior superior iliac spine (ASIS) must not rise or turn back in retroversion, thorax must not stiffen, shoulders must not rise or bend forward, gluteus must remain uncontracted.

The therapist has to consider all these elements. With this kind of approach, after three-five sessions, positive changes can already be seen. Sessions last about an hour and are done once a week. Then, when it is possible, the intensity of the work will be increased, as it is shown in figure 11.



Figure 11 This posture is quite difficult and it has to be considered as an arriving point. If the other sessions have been correct and progressive and the patient's conditions allow it, than it is possible to reach this goal.

It is possible to add many other movements to complete a series of very interesting and functional exercises: it is important to understand and evaluate what has been said so far in order to avoid proposing the patient exercises of muscular building up exercises, which will be in complete contrast with the fundamental mechanic of coaptation first and of arthrosis later.

For more information on the Raggi Method®- Pancafit® please address to Posturalmed S.A.

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