LET'S TALK ABOUT

JUVENILE OSTEOCHONDRITIS DISSECANS OF THE KNEE

A PATIENT GUIDE

kids back 2 sport

WHAT IS JUVENILE OSTEOCHONDRITIS DISSECANS?

Osteochondritis Dissecans (OCD) is a disorder affecting the cartilage and underlying bone in a joint. Juvenile Osteochondritis Dissecans (JOCD) occurs in young people whose growth plates haven't yet closed, most commonly in the knee.

The ends of bones are covered in a smooth, articular cartilage. This allows the bones of a joint to slide smoothly against one another. If there is damage to the blood vessels which supply the underlying bone, it can affect the adjacent cartilage. The overlying cartilage can begin to break down and in some instances can separate and, become loose. These injuries are called osteochondral lesions.

It is not yet known exactly what causes JOCD. It may be related to a:

- The blood supply to the growth tissue in the bone
- Repeated microtrauma to the bone from sports or other activity
- A single trauma to the joint

It has been observed to run in some families and can occur in both left and right knee which suggests it is less likely to be about trauma in these cases.
The lesion usually occurs in the part of the joint involved in taking body weight so pain is usually felt on running and jumping. It is because it is constantly under impact, that lesions often don't heal quickly.

WHO GETS JOCD?

It is much more common in sporty children, who participate in repeated high intensity and higher volumes of sport. It is more common in boys aged between 10 to 20.

It may be more frequent in children with malalignment of the knees such as "knock knees" and "bow legs".

WHAT ARE THE SYMPTOMS?

EARLY SIGNS - STABLE LESION
Pain in the affected joint
Swelling
Limping

UNSTABLE LESION
Pain in the affected joint
Swelling
Difficulty straightening the limb
Clicking
Locking
Giving way

HOW IS JOCD DIAGNOSED?

X-rays will be done initially. If the x-rays show a lesion, an MRI will be performed to find how big and stable the lesion might be. There are types of CT scans which can help assess healing which might be requested.

Some children have an isolated lesion, whilst others may have multiple lesions, or lesions in both knees or elbows so the specialist might order scans of both your left and right sides.

This lesion, or area of damaged bone, can be:

- stable
- unstable
- completely detached

HOW IS JOCD TREATED?

Once the child has been diagnosed with JOCD by a health professional, it is important to protect the joint surfaces from further damage.

Management is determined by the:

1. The size of the lesion
2. The location of the lesion
3. How mature the skeleton is
4. How stable the lesion is

STABLE INJURIES

In smaller, stable lesions and especially younger patients, the probability of healing is greater. A period of “watchful waiting” management is started. The child should begin a period of immediate rest from all sport. If the lesion is in the knee, the child may be put in a brace and put on crutches non weight bearing for a period of 6 weeks.

REHABILITATION

The child will need to have regular rehabilitation sessions with a physiotherapist, sports therapist or rehabilitator who has experience in treating sporty children to assess progress and to learn how to strengthen the muscles around the joint.

0-6 weeks - Braced and partial or non weight bearing
6-12 weeks – Gradual increase in weight bearing without brace.

Repeat x-rays or scans are usually performed at 3 months and if the lesion is healing, a gradual increase in low intensity activity is permitted.

If the treatment is started early, and the younger the child is when they sustain the injury, the better the outcome. The lesion usually heals in between 10-18 months and the long term outcomes are good.

SURGICAL MANAGEMENT

Surgical treatment may be needed if:

- After a period of rest the symptoms are unchanged
- The child has gone through puberty
- The lesion is larger than 1cm in diameter
- If the piece of cartilage has separated from the bone.

Surgery may be possible via keyhole (arthroscopic) procedure. The surgeon makes a small incision to insert a tiny camera and tools to assess and treat the affected area.

If the lesion is still attached to the bone and stable, the surgeon can gently create small holes in the joint surface which helps stimulate blood flow to the area and help the lesion to heal.

If the lesion has become completely detached from the bone, the surgeon will try to reattach the loose piece of bone with a screw. Occasionally, the loose fragment can not be secured and will be removed to prevent it from catching.

When it is necessary to remove the fragment, a procedure called procedure called an osteochondral autologous transplantation surgery (OATS) may be suggested. This procedure involves replacing injured bone and cartilage in the joint with healthy tissue (a graft) taken from another part of the body, such as the side of the knee.

REHABILITATION

After surgery, the child will be put in a brace to limit the bend in the knee and be on crutches for 6-8 weeks. They may not be allowed to put any weight on the affected limb during that time. The management will be individual for each child depending on the surgical approach that was performed.

The amount of movement and weight bearing allowed will be increased by the therapist under the guidance of the surgeon.

REHABILITATION

The rehabilitation of a child with JOCD is similar whether they have had surgery or been managed conservatively with “watchful waiting”. The specialist will dictate how much and for how long braces and weight bearing must be restricted.

EARLY

1. Reduce swelling - compression & ice devices
2. Restore full range of movement in the knee within the limits of the brace setting. A continuous motion machine may be applied to help the child move the knee through the required range.
3. If the other knee is not involved, they can begin a strength programme with their uninvolved limb. This has been shown to benefit the injured knee through a cross-education effect.
4. Quadriceps exercises with neuromuscular electric stimulation (NMeS) and virtual reality training
5. Seated calf raises
6. Trunk, and hip strength exercises

PROGRESS WEIGHT BEARING

Once the child can achieve a straight leg raise with no lag, they can start to progress to partial weight bearing providing they remain pain free. Use their phone or a watch to prescribe steps to be achieved in the day. Ensure no rapid spike in activity.

Gradually progress to full weight bearing as guided by the surgeon using a daily step progression. If the child is attending school, prescribe how many steps they can do before going back on to crutches as many school sites can require up to 15,000 steps a day which will initially be too high.

Balance training - add dual tasking and brain challenges to remove the focus away from the injured limb. These might include juggling, using apps liked Switched On to direct which limb to use.

Cardio fitness training: Stationary bike, elliptical, hydrotherapy. No breast stroke in swimming.

Closed chain double leg exercises in pain free range - mini squats and leg press.

Single leg strength: calf raises, single leg squats

Over several weeks, build up the land based weight bearing avoiding deep squats, lunges and plyometric work.

FULL WEIGHT BEARING

Once they have a calm, pain free knee when walking and they have full range of movement, they can begin jogging in chest deep water.

SAFELY BACK TO SPORT

RETURN TO PLAY

Start to add low impact jumping, skipping and hopping.

Running: Alter G if available. Straight-line running at 50% pace can be added in intervals of 10 seconds on: 30 seconds off slowly building up the active periods and reducing the rest periods.

If the child plays sport involving kicking, a graduated kicking programme can be commenced. This involves starting with kicks less than 10 metres. Each week, slowly add more volume, then intesity and distance.

Start change of direction, cutting/pivoting, and introduce sports-specific drills under the supervision of a sports therapist or physical therapist.

The demands of sport are different for each child. Some play one sport, others play mutliple and seasons overlap. The child may play for a team and it is important to speak to the coach to understand what the other team members are doing at that time to prepare the child coming back from injury for the demands of the sessions.

It is not just physical demands that should be introduced, but incuding the ability to perform physical tasks such as hopping, whilst catching, whilst tracking another player and making quick decisions. The child must be ready for these complexities before returning to competition.

RETURN TO COMPETITION

A common error in trying to reintroduce sport again is to go back at the same volume or intensity as they were playing before the pain came on. The body needs time to adjust and adapt to the reintroduction of impact loading again.

Gradually add back in more activities every week observing the reaction for any pain. Once they have been able to train pain free for 4-6 weeks start to add back in competition and matches initially limiting pitch or exposure time.