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# CANINE HIP DYSPLASIA

## DOUBLE / TRIPLE PELVIC OSTEOTOMY (DPO / TPO)

### Introduction

DPO / TPO are treatment options for canine hip dysplasia (CHD). Please refer CHD pamphlet, also available on this site, for more detail before considering specific treatment options.

The aim of DPO / TPO is to create a deeper socket (acetabulum) to improve stability of the hip joint (Fig.3).

It should always be remembered that CHD is primarily a disease of hip laxity, and it is this laxity which results in damage to the soft tissues around the joint and development of osteoarthritis within the joint which cause the pain and dysfunction associated with CHD. In juvenile dogs a portion of the socket is made up of cartilage which only turns to bone as the animal matures (around 10 months of age). This soft cartilage is easily damaged as the femur head (ball) pops in and out of the socket.

Age of identification of CHD is critical with DPO / TPO as it is generally performed on animals between **6-16 months of age**. There is often a narrow window of opportunity for the surgery before the animals have damaged the edge of the socket which is critical to the success of DPO / TPO surgery. Therefore **early assessment of the hips should be considered in at risk animals**.

Assessment of at risk animals is often performed at approximately **6 months of age**, however the early assessment performed for JPS (See JPS handout available on this site) may also be used for diagnosis of potential candidates. This assessment will involve your animal being either sedated or anaesthetized to have their hips thoroughly assessed by a clinician familiar with the early assessment of canine hips, and may involve the need for specific X-rays in animals found to have suspect hips on the clinical examination. Selection of appropriate animals for DPO / TPO surgery is important to improve the success rate of the surgery. Some animals may have done significant damage to their sockets as early as 5-6 months of age which may exclude them for being good candidates for TPO. Generally the earlier a DPO / TPO is performed then the better the success of the surgery as less osteoarthritis will develop in the joint.

Although more invasive than the JPS procedure, when DPO / TPO is performed on appropriate cases it is a very successful operation for the treatment of CHD which has few complications.

## DPO / TPO Surgery

DPO involves cutting the pelvis in two places while TPO involves cutting the pelvis in three places (Fig.1) to free up the portion of pelvis which holds the socket. The socket is then rotated the appropriate amount (determined on the initial examination) to ensure that the ball (femur head) will remain within the socket and not pop in and out with normal activity. The free pelvic fragment is then attached back in place with a plate and screws (Fig.2). Slightly different plates are used for the DPO and TPO surgeries.



**Figure 1.** Location of the three cuts made in the pelvic bones.

This animal has normal hip joints.



**Figure 2.** Appearance of the pelvis after having had TPO performed on both sides.

As can be appreciated the integrity of the socket is critical to success of the surgery. Rotating a damaged socket will not result in a stable joint.

Care must be taken to protect surrounding structures during the surgery such as some nerves which are critical to limb function. With appropriate care the risk of damage to these structures is very low. If a DPO / TPO is performed then the dog should be desexed (spayed, castrated / vasectomised) to prevent them breeding and therefore spreading hip dysplasia genes to future generations.

## Postoperative Care

Aftercare will vary depending upon the individual animal and if DPO / TPO has been performed on one or two sides of the pelvis. Animals that have had both sides operated at once generally need more intensive aftercare in the first week or so after surgery as many are quite reluctant to stand or walk for any period. By two weeks after surgery the majority of animals are moving around reasonably freely. Strict cage rest in an environment with non-slip flooring is generally recommended for 6-8 weeks after surgery and the dogs should be taken out to toilet on a leash. Follow up X-rays will generally be performed at approximately 4 weeks after surgery to assess the healing of the pelvis and thereby determine the degree and duration of ongoing rest. Excessive early activity will increase the risk of surgical complications or failure. Loosening of the screws, de-rotation of the socket segment and narrowing of the pelvic canal are some of the more severe potential complications which can occur. Most animals make an uneventful recovery.

Your dog will be kept in for 1-2 days after surgery for monitoring and management of their pain relief. They will then be sent home with further pain relief and instruction on rehabilitation. A check up would normally then be performed approximately 5 days after surgery and again at 10-14 days after surgery. If external skin sutures are present they will need to be removed at this time.

The conformation of the hips immediately after surgery is improved and therefore lowers the risk of further damage to the edge of the socket (compare this to JPS). However time is needed to allow the pelvic bones to heal where they have been cut. It will take some time for the bone and surrounding soft tissues to heal fully and therefore it would still be recommended that exercises that will put an

excessive force on the hip joint should be avoided until the healing is complete and the dogs bones have matured fully (around 10-12 months of age). For example sudden acceleration, jumping, twisting and hard cornering should be avoided. Once the bones have healed adequately, controlled running, swimming and wading in water should be promoted to maintain the muscles around the hip joint which serve an important role in stabilizing the hip joint.

## Summary for DPO / TPO

- Assess the hips of at risk breeds as early as possible.
- Assess the hips of any dogs showing clinical signs as soon as possible. Giving a period of rest and pain relief may allow the socket to become severely damaged and remove DPO / TPO as a suitable treatment option.
- Surgery is performed from 6 – 16 months of age. The earlier DPO / TPO surgery is performed then the better the long term result.
- Once the socket sustains any significant damaged then DPO / TPO may not be a good surgical option.
- Careful assessment and selection of appropriate animals and owners is critical for surgery to be successful.
- Strict cage rest is required for 4-8 weeks after surgery.
- Follow up X-rays will be performed approximately 4 weeks after surgery.
- Postoperative recovery is usually uneventful. Early post operative management may require assisted walking, especially if surgery is performed on both sides at once.
- Other drugs, physiotherapy programmes and treatment options may be used concurrently with DPO / TPO.

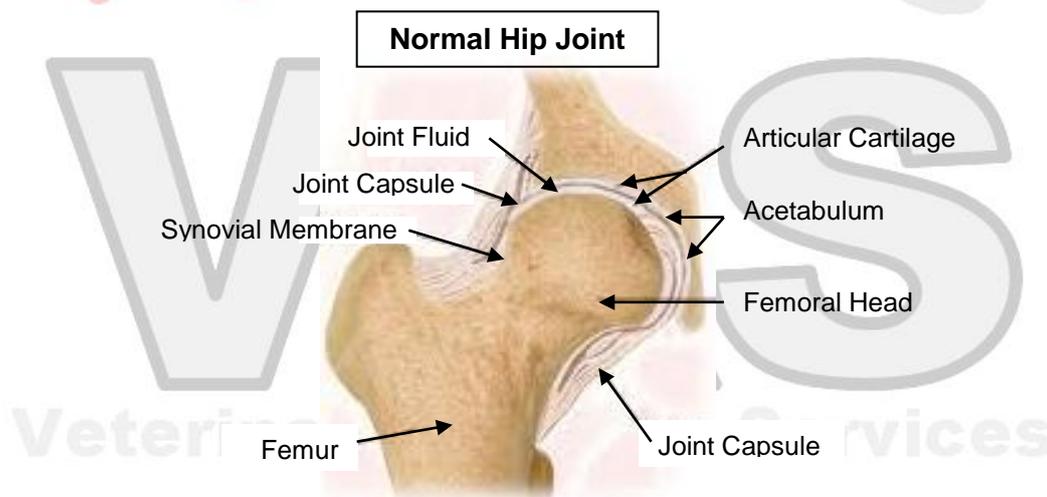


Figure 3