



**San Carlos Veterinary Hospital (SCVH)**  
8618 Lake Murray Blvd.  
San Diego, CA 92119  
(619) 460-3100  
[www.sancarlosvet.com](http://www.sancarlosvet.com)

- Dr. Dean R. Gahring, D.V.M.; Diplomate, ACVS
  - Dr. Bruce N. Persky, D.V.M.
  - Dr. Stanley P. Kus, M.S., D.V.M.
  - Dr. Laurel Nishida, D.V.M.
- E-mail: [info@sancarlosvet.com](mailto:info@sancarlosvet.com)

## What is a DARthroplasty?

### How is it used for treatment of canine hip dysplasia?

By

**Dean R. Gahring, D.V.M., Diplomate,  
American College of Veterinary Surgeons**

In [canine hip dysplasia](#), the acetabulae (hip sockets) do not form correctly to provide congruent fit with the femoral head. In the early stages of dysplasia, there is minimal deformity and cartilage destruction. The primary problem at that time is joint laxity. The femoral head does not remain firmly seated beneath the dorsal acetabular rim (DAR) of the hip socket. The "corrective" surgical procedure best recommended for these cases would be the triple pelvic osteotomy (TPO), whereby the femoral head can be firmly seated and maintained within an acetabulum that has been minimally damaged.

When acetabular filling has progressed further to the point that the DAR cannot "cover" the femoral head enough to prevent subluxation and cartilage damage, TPO is much less effective. Long term results of TPO's done with greater than 30 degrees of rotation usually end in progressive degenerative disease. At this point, "salvage" procedures are considered, such as femoral head ostectomies, or FHOs, in which the "ball" portions of the hip joints are removed, or total hip replacements (THR). However, there is another procedure that has shown great promise as an alternative to the above two salvage procedures: DARthroplasty.



Figure 1: This is a DAR view, showing how shallow Sadie's acetabulae were.



Figure 2: The femoral heads (white lines) and acetabular rims (black lines) are outlined to demonstrate how shallow the hip joints were before surgery.

Continued



What is DARthroplasty? During this surgical procedure, corticocancellous bone strips are harvested from the ilial wings, contoured to fit under the gemelli and deep gluteal muscles over the dorsal hip joint capsule at the point of maximal femoral head subluxation. They are sutured to the dorsal joint capsule, after being sutured to themselves, and then additional cancellous bone graft is packed over the bone strips. The bone grafts eventually become solid bony "roofs" over the femoral heads and the joint capsule becomes the new "joint surface". Long term results have been very encouraging in that progressive degenerative joint disease has been minimal.

[Sadie](#) is an example of hip dysplasia that was treated with DARthroplasty.

Sadie has had her left hip operated as well. She is doing GREAT! There is no lameness, no limitation of activity or range of motion in either hip, no significant loss of strength.

Long-term results have shown that limbs that have had TPOs end up with slightly greater muscle mass than ones where DARthroplasties have been done. However, the bottom line is that in both cases the dogs are active, athletic, and pain-free. They do have some limitation in abduction (ability to "lift" their leg) due to the new DAR, but rarely require total hip replacements or other "salvage" procedures. They also have less requirement for anti-inflammatory medications for pain management later in life. This procedure has nicely bridged the gap between TPO's and the salvage procedures of FHO & THR.

Continued on Page 3.

The basics of the DARthroplasty surgical procedure illustrated



Figures 3 & 4: Five months after right hip DARthroplasty. The black dotted lines in the X-ray (fig. 3) and the white lines (fig. 4) indicate where the bone graft strips have become solid “new dorsal acetabular rims”. This provides good bony coverage to the femoral heads.



Figure 4:



Figure 5: The "new DAR" (white arrow)



The following drawings illustrate the basics of the DARthroplasty surgical procedure:

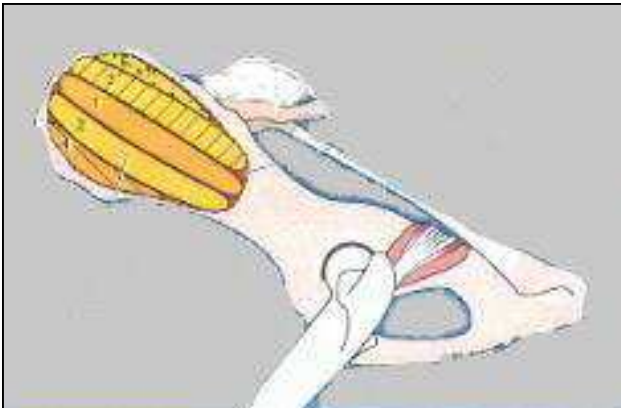


Figure 6: The corticocancellous bone graft strips are harvested from the ilial wing of the pelvis.

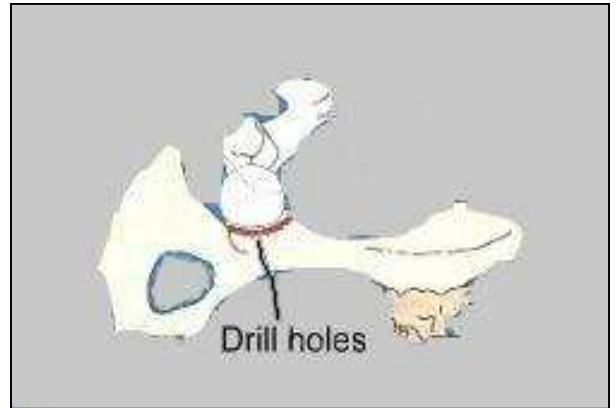


Figure 7: Drill holes in the "old" DAR (hip socket) where the "new" DAR bone graft will anchor.

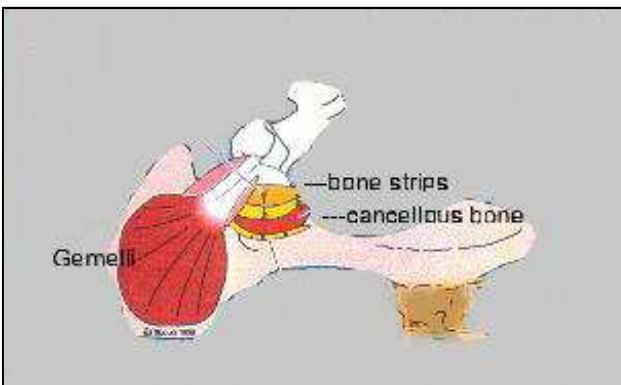


Figure 8: The corticocancellous bone strips are sutured to each other and to the joint capsule, then covered with more cancellous bone graft. These will eventually become the new hip joint DAR (new hip joint "roof").

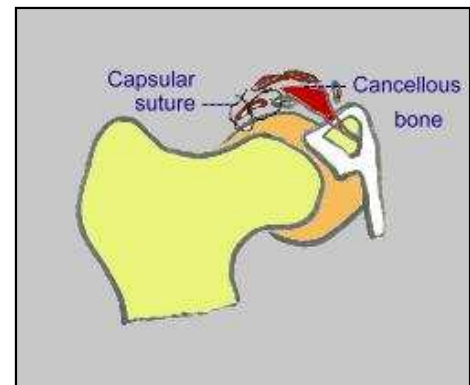


Figure 9: A side view demonstrating how the bone graft is sutured in place and how the graft eventually becomes anchored to the old hip socket .