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Stem selection for total hip replacement

We read with great interest the recent study describing the process used by the authors to select the style of femoral stem they felt was appropriate for a particular patient undergoing total hip replacement.¹ The paper nicely outlines a number of factors that must be considered when planning femoral stem placement. However, our concern is that they then use this case data to propose an algorithm that surgeons should use for selecting femoral stem type. While the algorithm did not officially exist during the study, it is an articulation of the criteria that the primary surgeon used during decision making on these cases. As such, it is based on his opinion and experience, and not on a direct comparison of matched cases with different stem types. For instance, they propose that dogs older than 7.5 years of age, or heavier than 45 kg, should receive a cemented stem. They outline reasons why they think this should be so, but because they applied their algorithm to the cases they present, they do not actually compare cemented and cementless femoral stems in these groups, and show that one is better, or worse, than the other.

At North Carolina State University we have not placed a cemented femoral stem in a medium-, large-, or giant-breed dog in many years, and have many cases that do not follow the proposed algorithm. We agree with the authors that there may be increased risk of intraoperative or postoperative fissure, or fracture, or subsidence in older, heavier dogs but felt it important to point out that our own experience differs from that outlined in this paper.

Currently, the choice of femoral stem is heavily influenced by surgeon bias. We admit to being heavily biased against cemented stems. In our experience, and in our interpretation of the literature, the risks of loosening and infection bias us towards the cementless options. We place a prophylactic cerclage wire before broaching in femora that we feel have an increased risk of fissuring. Since the lateral bolt cementless stem has become available, we will often select that style stem for older, heavier dogs with thinner cortices, and/or a low Canal Flare Index.

We acknowledge that this will be a contentious issue for many years to come because it is extremely difficult to really study and tease out all the factors that impact the case outcome. As an example, if we were to do a randomized study comparing complication rates of cemented and lateral bolt cementless stems in dogs older than 7.5 years of age, it is likely that we would have a different outcome to a similar study performed by Dr. Dyce, just because of his vast experience with cemented stems and our comfort with cementless stems.

We agree that it is very important for a surgeon to consider all the factors that will impact the outcome of femoral stem placement in every total hip replacement case. Patient, surgeon, and even owner factors might all influence the final choice so that the patient will have the best chance of a complication-free recovery.

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