Clinical outcome and complications of thoracic and pelvic limb stump and socket prostheses

**Andrew Phillips¹, Elvin Kulendra¹,
Edith Bishop², Michelle Monk³,
Kevin Parsons⁴, Arthur House²**

¹ Royal Veterinary College, Hatfield, Hertfordshire, UK
² Veterinary Referral Hospital, Melbourne, Victoria, Australia
³ Dogs In Motion, Moorabbin, Victoria, Australia
⁴ Langford Veterinary Services, Langford, Bristol, UK

Amputation is a well-tolerated procedure routinely performed in small animal practice. There remains a small cohort of animal for which amputation is not an option. Various limb salvage techniques, particularly for the distal radius, have been developed for this cohort including: cortical allograft, endoprostheses, pasteurised autograft, vascularised ulna transposition, osteointegrated implants and stump socket prostheses (SSP). Recently, specific veterinary SSP have become available. This retrospective study aims to report the use of these SSP and evaluate the clinical outcome and associated complications.

Owners of all animals fitted with a SSP were contacted and completed a questionnaire. The questionnaire contained sections regarding the reason for SSP fitting,

compliance and tolerance of the SSP, function of the SSP, quality of life and complications.

Eleven dogs and 1 sheep with a median age of 3 years (range 1.5–12 years) and mean weight of 19.4 kg (standard deviation 12.2) had a total of 14 SSP fitted: 6 thoracic limb, 4 pelvic limb and 2 bilateral thoracic limb SSP. Median follow up time was 6 months (range 6–28 months). Reasons for fitting of SSP were: congenital deformity (5 cases), trauma (5 cases), surgical complication and neoplasia (1 case each). Eight continue to use the SSP, with a median duration of SSP use daily of 8–12 hours (range 0–16 hours). Six animals fully use the SSP all the time. A good or excellent quality of life is perceived in 10 animals following fitting of SSP.

Overall eight of the twelve had a good or excellent functional outcome. All four dogs with poor outcomes had thoracic limb SSP. Two were small, <10kg dogs for whom both owners perceived the SSP was too heavy, one dog had bilateral SSP and another received a poorly fitting SSP.

Complications were observed in five animals. Two animals had surgical complications associated with amputations: both suffered wound dehiscence and one seroma. The SSP was not tolerated in three animals, there were two cases of pressure sores – one dog with bilateral SSP developed secondary recurrent infections.

SSP are a viable option when amputation cannot be tolerated. Larger studies are required but initial results indicate careful fitting of the SSP is important and consideration should given before fitting a bilateral thoracic SSP or a thoracic SSP to a small dog.

Simplifying preoperative and postoperative assessment of patellar position

James Miles

Faculty of Health and Medical Sciences, Copenhagen, Denmark

Assessment of patellar proximodistal position is of interest to clinicians due to the associations between patella alta (high-riding patella) and medial patellar luxation and between patella baja/infera (low-riding patella) and lateral patellar luxation. Additionally, patellar proximodistal position may be iatrogenically altered during tibial osteotomy procedures.

Several positioning indices have been assessed. None are without flaws. The simplest, and only stifle angle independent, index (Insall-Salvati) is poorly suited to postoperative evaluations to assess correction of position or iatrogenic problems. The most angle-stable alternative (Blackburne-Peel index) is cumbersome, requires drawing a line, measuring two distances and then calculation of a ratio. A simpler, angle-stable measurement is needed.

Following a small pilot study, three new candidate indices were tested using 24 red fox (*Vulpes vulpes*) stifles

radiographed at caudal stifle angles of 30° to 148°. The fox stifle has been previously established as a surrogate for the canine stifle. Cadavers were obtained following euthanasia for reasons unrelated to this study. Radiographs were read twice using ImageJ by a single observer. Indices were defined as the angle between lines connecting the caudal aspect of the medial tibial plateau to the caudal aspects of the femoral condyles and the distal patellar pole (1), proximal patellar pole (2) and distal patellar articular surface (3). Two joint angle ranges were investigated using ANOVA: all angles and a subset between 75° and 113°. The subset includes angles at which the patellar tendon should become taut in sedated dogs, and includes 90°, which is an easy target angle in practice. Index 2 varied significantly over both ranges, index 1 varied significantly only over the wider range, but index 3 appeared fully angle-stable.

All indices were similarly and acceptably repeatable, with within-subject SD of 1.5°–1.7°, substantially less than the magnitudes of the calculated reference intervals of 13°–18°.

The indices referencing the distal patellar pole or distal patellar articular surface offer potential as an angle-stable marker of patellar proximodistal positioning. The single measurement is readily made with digital imaging software, and is considerably less cumbersome than current alternatives.