Salvage Surgery of the Propatagium (Propatagioplasty) in an Australian Pelican (*Pelecanus conspicillatus*).

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An immature 4.6 Kg female Australian Pelican was presented to the Australian Wildlife Hospital with trauma to the right wing and an inability to fly. There was severe scar tissue, infection and inflammation of the right propatagium which included the propatagial ligament. There was swelling of the elbow joint but radiography indicated that the distal humerus and proximal radius and ulna appeared to be unaffected. Functionally, the wing was unable to voluntarily extend or flex.

The wound was debrided with dilute betadine until clean tissue was exposed, then irrigated with sterile saline. Medi-honey (http://www.medihoney.com/aust_default.htm) was applied directly to the wound which was then dressed with Melolin (Smith and Nephew), Vetwrap and Elastoplast. Parenteral antibiotic therapy was instituted with 300 mg of Lincospectin injection (100 mg lincomycin; 50 mg spectinomycin/ml), by shallow intramuscular injection, twice daily for 5 days. Additional supportive care included intravenous fluid therapy. After 48 hours the wound was re-dressed. At this stage it was determined that the propatagial ligament had disintegrated at the site of injury. Enrofloxacin was added at 50 mg per os BID (Baytril 50mg tablets) as was meloxicam at 0.4mg/Kg IM BID for 24 hours, then SID for 4 days.

Dressing changes continued and the wound healed well without the wing being functional. Although the wing sat normally against the body at rest, there was concern that the elbow was hyperextending when the bird walked forward or tried to flap its other wing, risking more severe injury.

After much consultation it was determined that the bird would be kept in a “semi-captive environment”. It was decided that a salvage surgical procedure would be attempted to prevent hyperextension of the elbow. Fusion of the elbow joint was rejected in favour of a less invasive, soft tissue approach.

General anaesthesia was induced with propofol at 5 mg/kg IV, after which the bird was intubated and maintained on 2-3% isoflurane delivered at 1.5 L/min. Positive pressure ventilation was maintained at 6 breaths/minute. Intravenous fluid therapy was instituted with Hartmann’s solution at a rate of 15mls/hr.

A 10-15mm band of skin was dissected from the cranial edge of the right elbow. This extended for approximately 7 cm either side of the elbow ie from the distal humerus, across the elbow and along the proximal radius. The wing was flexed so that the cut surfaces were in direct apposition. The dorsal humeral edge was sutured in a simple continuous pattern to the dorsal radial edge and the ventral humeral edge was sutured to the ventral radial edge. An absorbable monofilament suture was used (4-0 PDS). Sutures were also placed in the soft tissue. The wound was dressed and the flexed wing bandaged. Again a course

of lincospectin (5 days) and metacam (4 days) was instituted and a single post operative dose of butorphanol (2mk/kg) IM was given. The bird recovered uneventfully from anaesthesia. A dressing change 2 days later showed a clean wound which was holding well. Dressing changes were then carried out every 3 days. After 2 weeks the dressings were removed and not replaced. A reinspection 4 weeks post surgery showed complete healing with no sign of stretching. The bird was running well with the wing remaining flexed. Palpation of the elbow did not reveal any evidence of bony fusion.

Two years post surgery the result is surprisingly successful. The bird continues to swim, run and flap the unaffected wing. The injured wing, although able to stretch a little does not hyperextend, as may be expected from the weight of the distal wing and the lack of any bony fusion.

Discussion

The reason for choosing this technique was to stop uncontrolled elbow extension caused by the severed propatagial ligament and damaged surrounding elastic and vascular structures. However, we did not want to traumatise the elbow joint itself as may occur with more conventional surgical ankylosing techniques.

The main concerns with this procedure are either wound breakdown or long term stretching of the skin and soft tissue due to the weight of the distal wing, especially during periods of increased activity by the bird.

This technique is relatively quick, requires only basic surgical skills and is less invasive when compared to joint ankylosis and as a salvage procedure may be considered in cases of irrepairable propatagial ligament injuries.

References

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