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A NOVEL TECHNIQUE FOR PREVENTION OF FEATHER DESTRUCTIVE BEHAVIOUR AND SELF-MUTILATION IN TWO HARRIS' HAWKS (*PARABUTEO UNICINCTUS*)

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Short Communication

Feather destructive behaviour (FDB) is a commonly encountered problem in pet parrots and is well described in the literature. Causes tend to be categorised into medical, psychological and husbandry-related. Although self mutilation and FDB in raptors is rare[i], more recently they have been described in captive birds of prey[ii] with causes being categorised as medical or behavioural[iii].

The underlying cause of behavioural problems in birds of prey may be as difficult to determine, as with parrots. However, the principles of diagnosis and treatment are similar; with the aim of finding the underlying cause. Investigation should comprise a thorough history-taking, physical examination, mute exam (wet prep, floatation and cytology), haematology, biochemistry and radiography. Additional tests might include feather pulp cytology (JC), skin biopsy with histopathology and culture and sensitivity where indicated. A muscle biopsy may be considered in cases where birds are mutilating their skin or underlying musculature.

Table 1, shows details of the raptors presented to one of the authors (NF) for FDB or self trauma over the proceeding 10 years.

Species	**Area of FDB**	**Cause**	**Number**
Parabuteo unicinctus	Medial aspect of thighs	Boredom	24
Aquila rapax	Medial thighs	Boredom	1
Parabuteo unicinctus	Distal wing	Localised post trauma / infection	3

Parabuteo unicinctus	Foot / phalanges	Localised post trauma / infection	2
Black vulture	Propatagium	Localised post trauma	1
Parabuteo unicinctus	Wing coverts	Ecto-parasites (Feather lice)	1
Falco peregrinus	Feathered areas of tarso metatarsus	Ecto-parasites (*Dermanyssus gallinae*)	2
Accipiter nisus	Cere and over lying frontal bone	Ecto-parasites (*Cnemidocoptes* sp)	1
Stripped owl	Bilaterally all flight feathers. Occurred annually at start of breeding season	? Hormonal / Frustrated breeder	1
Gyr x Merlin hybrid	Bilaterally secondary flight feathers at the start of subsequent flying seasons	? Unnatural skeletal size with respect to periosteal pressure from attachment of secondary feathers	1

As Table 1 demonstrates, by far the commonest cause of FDBand self mutilation, is considered to be boredom in highly intelligent raptorial species, of which the Harris hawk (*Parabuteo unicinctus*), is not only the most highly populated, but also considered to be of higher inteligence. These cases tend to occur only in solitary aviary or tethered birds in seasons when the bird is not being flown, i.e. when it is less well occupied and stimulated. It is interesting that free living Harris hawks live and hunt in groups and hence rely on others for stimulation and activity, in a similar manner to most psittacines. This presentation will not be considered further here save to note that such cases should be managed by increasing environmental activity and stimulation.

A minority of FDB cases, involve self trauma (of feather or tissue), subsequent to localised trauma or infection. In the authors' experience this has occurred most commonly on the distal wings. Furthermore self mutilation will occur subsequent to bandage application, e.g. on the phalanges. This may be accidental in the process of attempted bandage removal, or due to pain or irritation to soft tissues as a result of bandage placement. In the authors' experience, carefully and safely applied light weight bandages, do not typically result in bandage removal by the patient (in contrast to parrots who rarely tolerate bandages). The exceptions are most commonly seen in the

Harris hawk, in whom it is suggested to occur as a consequence of a perceived natural intelligence and curiosity of this species when compared with other raptors.

In psittacine birds foam neck support or Elizabethan style collars may be used as a last resort to control FDB or self-mutilation as a temporary measure whilst the underlying cause is addressed. Collars may also be used to prevent birds removing or chewing bandages and surgical sites after treatment or surgery, facilitating optimal healing.

In raptors effected by such problems, modified 'hoods' can be employed to prevent self trauma. Such hoods are fitted with a beak strap (an extension attached to the top and bottom of the aperture which the beak protrudes from). The strap situated immediately anterior to the beak, so as to prevent beak use. However this method necessitates the bird remaining hooded for an extended period (possibly several weeks), which the authors believe is contrary to the bird's welfare. More over there are risks associated when raptors regurgitating their 'casting', whilst hooded, as choking or aspiration can occur.

This communication describes a non invasive or painful, temporary beak modification which has been employed successfully by the authors in three Harris hawks. It has been used to prevent self trauma to infected wing wounds (post electrocution) (1), and pedal bandage removal following the treatment of infected pedal wounds (2).

Method:

The procedure is performed under general anaesthesia. The latter was achieved using a clear plastic facemask (Jorgensen Laboratories) connected to a modified Mapleson breathing system (D) (Paediatric Anaesthetic Breathing System; Intersurgical) using an isoflurane vaporiser (Ohmeda Isotec 3; Datex-Ohmeda). With minimal restraint each bird's head was gently placed into an appropriately sized clear plastic facemask and for anaesthetic induction 5% isoflurane in 100% oxygen was delivered at a flow rate of 2 L/min. Endotracheal intubation was carried out (ref – NF BSAVA Anaesth manual) and anaesthesia maintained with isoflurane in 100% oxygen at a level to prevent response to noxious stimulation. Carprofen (Rimadyl; Pfizer) was injected intramuscularly at 4mg/kg at the start of the procedure.

1. A fine guide hole was drilled in the tip of the upper beak using a 0.5mm surgical drill bit, or straight cutting suture needle.

2. Orthopaedic wire (gauge) was passed through the drilled hole.

3. Using wire twisters, the wire was twisted on the dorsal aspect of the beak, and then bent rostrally.

4. Dental acrylic was applied over the tip of the beak and wire. The wire acting as an anchor to assist prosthesis retention.

5. The patient was recovered from anaesthesia whilst restrained in a towel to prevent self trauma.

6. An example of a case where this technique was used. The foot of this Harris' Hawk was bandaged after bumblefoot surgery. However, she would not leave the bandage alone, despite many attempts to distract her or discourage the behavior. After applying the acrylic she was no longer able to remove the bandage and her lesions healed unremarkably.

7. Beak prosthesis must be removed with great care so as to avoid iatrogenic beak damage in the process. Dental drill and orthopaedic pin cutters were used in these cases and no beak damage occurred.

Discussion:

The dental acrylic was well tolerated by all three birds. No adverse signs were reported by the owners and the birds did not appear to be excessively bothered by the addition to the rostral aspect of their beak. In all three cases, the technique was entirely successful in preventing the birds traumatizing bandaging or self mutilating. The only changes in husbandry were that the birds had to have their food chopped up smaller than usual as they were no longer able to tear food, and they could not be used for hunting quarry. The dental acrylic remained in place (21 – 56 days), until removed and did not break as would be expected if applied in the same way to a parrot's beak.

This technique warrants further evaluation in birds of prey. It is a simple and effective technique that will prevent self-mutilation, FDB and bandage removal. The technique should not be used where there is an underlying cause for the behaviour which has not been addressed, or where an alternative beneficial husbandry change would achieve the same effect.. It would be inappropriate to use this technique in birds that were pruritic, painful, or without addressing the underlying cause of their self-mutilation. Further investigations are required to assess for any potential psychological effects. Monitoring for physical or behavioural stress indicators, to potentially include assessment of plasma or faecal cortisol levels.

References:

[i] Park, F. Behavior and Behavioral Problems of Australian Raptors in Captivity. *Semin Avian Exotic Pet Med* 12[4]:232-241 Oct'03 Review Article.
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[iii] Jones, M.P. Behavioural Aspects of Captive Birds of Prey. *Vet Clinic North Am Exotic Anim Pract.* 2001;4: 613-632.