Diagnosis, Differential Diagnosis & Treatment of Swellings of Structures other than the Abdomen (Lumps & Bumps)

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An abnormal discrete swelling may be a result of abscesses, foreign bodies, tumours, injuries or displaced structures.

If the bird has an **Abnormal Swelling** look for the following position where it may occur:

1. Asymmetry of legs or wings
2. Beak/Cere/Nares
3. Cere ± Face, Legs, Vent or Pygostyle
4. Cloaca/Vent
5. Feet/Joints
6. Legs
7. Periophthalmic
8. Skin
9. Subcutaneous
10. Tongue

Diagnostic Approach

- Collect History
- clinical examination and thorough, careful palpation of site involved
- Observe behaviour

Recommended tests

clinical examination
thorough, careful palpation of site to determine the structures involved in the swelling
radiographs and/or ultrasonography to determine density and components of the swelling

Optional extras

cytology of Fine Needle Aspirate from mass
biopsy of mass for histopathology &/or Culture & Sensitivity
blood Calcium & Phosphorus levels
diet evaluation

Differential Diagnosis

1. Asymmetry of legs or wing

The following conditions should be considered:

1.1 Fracture
1.2 Neoplasia
1.3 Dislocation
1.4 Calcium:Phosphorus Imbalance
1.5 Nutritional/Congenital
1.6 Feather Cyst

1.1 Fracture

Can be present in either/or wings and legs.

History

trauma or fighting

Clinical signs

Wings

dropped wing (held in abnormal position)
unable to fly

Legs

predominant weight bearing on one leg
lameness
palpable fracture

Diagnosis

palpable fracture
presence of bruising or a wound
spray area with alcohol to aid visualisation of the extent of bruising
crepitus at fracture site
radiographs

1.2 Neoplasia

The following conditions should be considered:

- Fibroma/Fibrosarcoma
  - occur anywhere on body
  - firm on palpation
  - cut surface has a granular appearance, often necrotic centre
  - locally invasive, rare to metastasise
- Chondroma/Chondrosarcoma
  - epiphyses of long bones legs and wings
- Osteoma/Osteosarcoma
  - epiphyses of long bones legs and wings
  - may be signs in beak as well
  - elevated SAP reflects osteoclastic activity

- Haemangioma/Haemangiosarcoma
  soft black to red subcutaneous swellings
- Rhabdomyoma/Rhabdomysarcoma
  firm and lobulated mass
  wing and shoulder muscles
  dorsal lumbar muscles

Clinical signs

swelling of insidious onset anywhere on wing or leg, often involving a joint
chronic lameness
chronic decreased ability to fly

Diagnosis

clinical examination
cytology of aspirate from mass
radiograph
biopsy of swelling

1.3 Dislocation

History

trauma or fighting

Clinical signs

dropped wing (held in abnormal position)
unable to fly
predominant weight bearing on one leg
lameness

Diagnosis

palpable swelling at joint
presence of bruising, wound and crepitus
radiographs

1.4 Calcium : Phosphorus Imbalance

You may see metabolic bone disease with pathologic folding fractures as in nutritional secondary hyperparathyroidism in mammals.

History

diet deficient in Vitamin D3
normal Ca:P ratio varies from 1.5:1.0 (laying hens may need to 3:1)
- any variation should be regarded suspiciously, especially in young, growing birds

young growing bird most commonly affected, particularly if hand-reared
more common in carnivorous species (Magpie, Currawong, Raptors)
Juvenile African Grey Parrot very susceptible

Clinical signs

dropped wing (held in abnormal position)
unable to fly
predominant weight bearing on one leg
lameness

palpable fracture - usually folding fractures
multiple fractures may be in long bones as well as other sites eg. beak, spine, sternum

Diagnosis

palpable fracture
presence of bruising, wound or crepitus
radiographs
blood Calcium or Phosphorus levels outside normal range

1.5 Nutritional/Congenital

The following conditions should be considered:

- Splay legs
- Hind toe curled forward
- Curled toes
- Slipped wing
- Slipped gastrocnemius tendon

Diagnosis

Palpation
Radiograph
evaluate both diet and the bird's selective feeding practices for any deficiencies

1.6 Feather Cyst

This is a common problem in Blue and Gold Macaws. Hyperpteronosis cystica occur in Canaries - Norwich, Crested, Crest-bred and Gloucester most commonly but can be seen in any that are selectively bred for "double buff" soft feathers. The cysts can occur secondary to anything that causes damage to the feather follicle.

The following causes should be considered:

- Trauma
- Infection (bacteria, virus)
- Parasites
- Malnutrition

Clinical signs

isolated or multiple swellings
common sites - wing, dorsal thoracolumbar and legs

Diagnosis

clinical examination
lancing and inspection of cyst contents
Smear of contents
Gram stain (bacteria)

2. Beak/Cere/Nares

2.1 Brown Cere Hypertrophy

In budgerigars, the cere colour is an indication of circulating hormone levels. In hens that are beginning to cycle at the beginning of the breeding season, the cere may turn a darker brown than normal as a response to increasing oestrogen levels. The cere has a lamellar appearance and the excessive horn may be peeled away. In cocks it may be a signs of hormonal imbalance due to neoplasia of a testis (eg. sertoli cell tumour).

Clinical signs

bilaterally symmetrical proliferative hypertrophy of cere lamellae
May be up to 1 cm thick

Diagnosis

Clinical examination
Radiography or endoscopy to detect gonadal tumour
space occupying lesion near anterior pole of kidneys,

Treatment

Remove with rubbing gently with your fingernail

2.2 Malocclusion

2.2.1 Softbills and passerines

Clinical signs

crossover of the upper and lower beaks can occur
may be the result of trauma or a congenital problem

Diagnosis

Clinical examination
Age of onset and history of trauma should differentiate

2.2.2 Parrots

Causes cited relate to a change in chewing behaviour:
Senility and associated weakness
improper food to wear down the beak properly
any chronic disease causing the bird to cease normal its normal chewing behaviour
proper chewing material not being available
improper incubation

History

Especially in Budgerigars

Clinical signs

overgrowth of upper or lower beak can occur
Common presentation in Budgerigars is the upper beak trapped inside the lower beak and consequent overgrowth of lower beak.
In some cases a "scissor bill" syndrome is described where there is crossover of the beaks.
In Budgerigars this is often a secondary change due to *Cnemidocoptes* mite infestation.

Diagnosis
Clinical examination
skin scraping examination for Cnemidocoptes

2.3 Congenital deformity

This is an area that requires more research in birds.

Most of these conditions have only been characterised in poultry. An example of this is the Micromelic Syndrome of White Pekin ducklings (*Anas platyrhynchos*) is an autosomal recessive mutation. Signs include: a short maxilla, reduced size in general, shortened limbs, abnormal feathers and subcutaneous oedema in cervical region.

Other conditions resulting in beak deformities have been reported in White leghorn Chickens, wild ducks and swans

2.4 Neoplasia

2.4.1 Malignant Tumours:

Sarcomas, carcinomas and osteosarcomas have been reported as causes of beak deformity.

Clinical signs
overgrowth of the beak
necrosis
changes to contour of the beak lamellae.

Diagnosis
Careful inspection is required to differentiate invasive neoplasia from haemorrhage between the laminae due to trauma.
Beak tumours are usually malignant and associated with pain as well, haemorrhage is apparent when the abnormal tissue is scraped away.
With intralaminal haemorrhage there is minimal to no bleeding when the abnormal tissue is scraped away.

2.4.2 Benign Tumours:

In Budgerigars, Papillomas occasionally occur at the junction of the skin and horny tissue of the beak. Most common position is the beak commissure.

Clinical signs
typical papilloma at beak/skin junction

Diagnosis
Clinical examination
biopsy if uncertain

2.4.3 Yeast or Bacterial Infections

Any beak injury (fight wound, trauma) can become infected. The common finding with Gram stain is mixed bacterial infections as well as occasional yeasts (*Candida*).

The same microbes may be found with Circovirus as secondary invaders. With any beak infection in a parrot examination should be carried out for Circovirus.

Clinical signs

Beak wound that won't heal
presence of purulent and necrotic material

Diagnosis

Sterile swab for bacteriology (Gram stain C&S)
Collect blood & growing feathers for HA, HI or PCR for Circovirus

2.4.4 Fungal toxins

Mycotoxins from *Fusarium* spp. in mouldy food has resulted in beak deformities in poultry.

Clinical signs

raised yellow/white areas on the surface of the beak

Diagnosis

history of exposure to mycotoxin
Fungal Culture of food
Toxicological examination of food

2.5 Infection

The common causes of upper respiratory infection are Chlamydia, mycoplasma and bacteria (especially Staphylococci).
Caseous accumulation/Sinusitis swelling of cere and nares may be due to chronic accumulation of nasal discharge that is inspissated

Clinical signs

bird frequently rubs eye on feet or perch
conjunctivitis
blepharitis
uveitis
ocular discharge -serous or mucoid
feathers around the eye covered with thick, dried exudate
loss of feathers around the eye
corneal ulcers and keratitis develop with time
caseated abscesses can develop with time

Chronic infections may result in permanent depression of tear production with resultant chronic keratitis - "Dry Eye Syndrome". Research needs to be done to see if this is a similar auto-immune condition to that seen in dogs.

Diagnosis

Conjunctival scraping, aspirate from periorbital sinus or abscessed area should be performed
At least three smears should be made to look for:
(a) Chlamydia - Macchiavello or Jiminez or Modified Ziehl-Nielsen stains
(b) Mycoplasma - Giemsa stain

(c) bacteria - Gram stain

Mycoplasma often also cause sinus infections and other signs of upper respiratory disease**.**

Chlamydia also often cause signs of systemic illness such as depression, diarrhoea, dyspnoea.

3. Cere ± Face, Legs, Vent or Pygostyle

3.1 Cnemidocoptes

Cnemidocoptes pilae is the most common beak problem of Budgerigars. It is also common in *Neophema* spp, Princess Parrot (*Polytelis alexandrae*), Alexandrine parrots (*Psittacula nipalensis*), Kakarikis (*Cyanoramphus* spp) and Canaries. It is reported occasionally in other species such as Chaffinches (*Fringilla coelebs*), Magpies (*Gymnorhina tibicen*) and gallinaceous birds such as Chukar Partridge (*Alectoris graeca chukar*).

The lesions are raised crusts with small holes apparent in the crust. The initial lesion may be a raised groove usually near the base of the beak. The beak may become thicker and deformed. With time the texture of the beak may become quite soft and flaky. Lesions are usually first seen on the beak or the skin margins surrounding the beak (where they may be obscured by feathers). Any region of bare skin may be affected - eye margins, legs & feet, preen gland and around the vent. In some severe cases lesions may be seen in the bare skin between the feathers of the wing extremities or in the primary flight feather follicles eg. blue mutations of the Scarlet-chested parrot (*Neophema splendida*).

Name	**Sites commonly affected**
Budgerigar	Beak, cere, eye margins
Canary	f eet & legs
Aviary parrots	Beak, eye margins, preen gland, cloaca and feather follicles
Galliforms	legs & feet

Clinical Signs

crusts on bare skin areas
containing small holes/tunnels
has honeycomb appearance
may see deformity/erosion of beak and nares
chronic form causes proliferation of cere material
occludes nares
more common in young birds

Diagnosis

skin scraping and crush preparation in mineral oil should be examine microscopically for the mite
In thick, flaky lesions the material may need to be cleared in 10% potassium hydroxide.
Therapeutic trial with Ivermectin or Moxidectin

4. Cloaca/Vent

4.1 Egg Binding

Clinical Signs

a retained egg will be palpable in cloaca
many have a poorly formed shell and may not feel solid

4.2 Urate Concretion/Urolith

The aetiology of this condition is unknown. It is common in Macaws and Amazons

Clinical Signs

Large firm mass of urates palpated within cloaca

4.3 Cloacal Neoplasia

4.3.1 **Papillomatosis**

Clinical Signs

Thorough Cloacal Examination (usually under General Anaesthesia and aided by endoscopy)

glistening red structure
roughened mucosa at cloaca mucocutaneous junction
may be cauliflower mass late in course of the disease
may see:

- tenesmus
- melaena
- pasting of vent
- foul smelling faeces
- (bacterial proliferation in cloacal crypts)
- flatulence

Diagnosis

The challenge is to differentiate papillomatous tissue from cloacal prolapse
Apply apple cider vinegar - papillomatous tissue turns white, prolapsed tissue is unchanged
Histopathology
Look for papillomas at other regions of body may only be apparent late in the disease

- oropharynx
- choana
- oesophagus
- crop
- proventriculus
- gizzard
- mucosa of ear or eye

4.3.2 Cloacal prolapse

Clinical Signs

Thorough Cloacal Examination (usually under General Anaesthesia and aided by endoscopy)
Smooth, glistening pink to red tissue protruding from cloaca
May be associated with egg laying or during breeding season and accompanied by reproductive behaviour

4.3.3 Cloacitis

This is described as chronic inflammation of the cloaca. The aetiology is unknown.

Clinical Signs

foul odour ("Vent gleet")
mucosa covered by yellow diphtheritic membrane

4.3.4 Cloacal impaction

This is associated with many diseases of cloaca as mentioned above and is often the first sign reported

5. Feet/Joints

5.1 Synovial gout

Clinical Signs

white spots (tophi) over feet, esp. joints
Polydipsia/Polyuria

Diagnosis

cytology of joint aspirate
Visualise urate crystals

5.2 Bacterial Infection - bumblefoot/pododermatitis

This is a term to describe a degeneration of the foot structures. It is a superficial inflammation in the early stages but soon develops into degeneration of the deeper structures eventually resulting in changes to the bone. Pododermatitis is a broad term describing damage to the plantar aspect of the foot, particularly the central footpad. It is more commonly a problem in captivity for penguins, parrots, raptors, passerines, galliforms (quail, pheasants, poultry) and waterfowl.

This problem begins as inflammation of the plantar aspect of the foot but may develop into severe inflammation involving osteomyelitis and all the supporting joint structures. Infections are normally *Staphylococcus aureus, E. coli* or *Candida*

Contributory Causes of Bumblefoot:

persistent trauma/bruising to plantar aspect of feet
inappropriate substrate: too rough or hard
inappropriate perches: too big; too small
no variation in diameter

puncture wounds
overgrown claws
uneven weight distribution due to injury of opposite foot/leg
lack of exercise
obesity
waterfowl spending more time walking than swimming
poor sanitation & drainage of enclosure
Vitamin A deficiency

In passerines and parrots, the cause is most likely to be malnutrition.

Clinical signs

Degernes has suggested a grading based on the work of Halliwell to grade the severity of the bumblefoot:

Grade I	* Desquamation of small areas of plantar foot surface - small, shiny, pink areas. * Peeling/flaking of skin on legs and feet
Grade II	* Smooth, thinly surfaced, circumscribed areas on the plantar metatarsal pads of one or both feet. * Subcutaneous tissue almost visible through the translucent skin. * No distinct ulcers visible
Grade III	* Ulceration of the plantar metatarsal pads. * peripheral callus may form.
Grade IV	* Necrotic plug of tissue present in ulcer. * birds exhibit pain or lameness
Grade V	* Swelling and oedema (cellulitis) of the tissues surrounding the necrotic debris. * Digits/foot may be oedematous * Necrotic debris may accumulate in the metatarsal area, suggesting infection of the tendon sheaths * Severe lameness is common * The entire metatarsal pad may be affected * This is generally a chronic lesion
Grade VI	* Necrotic tendons recognised clinically as swelling of the digits and ruptured flexor tendons. * Ankylosis and nonfunctional digits usually present at recovery
Grade VI	* Osteomyelitis

Degernes L.A. (1994) *Trauma Medicine* in Avian Medicine: Principles and Application, Ed. Ritchie B.W., Harrison G.J. and Harrison L. R., Wingers Publishing Inc., Lake Worth, Florida, p. 426

Diagnosis

Clinical examination
Diet evaluation
Radiography
cytology: Gram stain

5.3 Tumour

Neoplasia of bone or soft tissue is an occasional finding in birds. Those causing signs in the foot or joints may arise from muscle, cartilage or bone

Diagnosis

Clinical examination
Radiography
Biopsy, cytology aspirate or post mortem specimen
cytology (impression smear)
histopathology

5.3.1 Muscle Neoplasms

Leiomyoma

benign smooth muscle tumour of gastrointestinal or female reproductive tract. May place pressure on sciatic nerve.

Leiomyosarcoma

malignant tumour of smooth muscle that may arise in any location. They are late to metastasise but may be locally invasive. Usually involved with the spleen.

Rhabdomyosarcoma

Malignant striated muscle neoplasm of wing, shoulder or dorsal lumbar muscles.

5.3.2 Cartilage and Bone Neoplasms

As a general rule, cartilage neoplasms often arise from the foot whereas bone neoplasms arise from the long bones.

Chondroma

Usually plantar aspect of the foot, cranium and proximal humerus.

Osteomas

Rarely seen tumour, usually well encapsulated. Reported in cranium, scapula, tarsometatarsus, elbow and plantar foot pad.

Osteosarcoma

Commonly seen at either end of long bones and occasionally at ribs, cranium, phalanges, eye socket and coccyx.

5.4 Virus

5.4.1 Herpesvirus

One form of this virus may cause flaking skin and papilloma-like lesions on the feet of Pigeons, Cockatoos, Magpies and raptors. The birds are usually clinically normal.

Diagnosis

Physical examination
Viral isolation for confirmation of diagnosis
Biopsy and Histopathology may aid.

5.4.2 **Poxvirus** is unable to penetrate intact skin. It requires some break in the skin integrity to enable it to cause disease. Mosquitoes or trauma are common causes of damage to the skin to allow

Poxvirus to invade.

History

pox lesions in other birds in the aviary
exposure to insects such as mosquitos

Clinical Signs

Note other signs of poxvirus lesions

Acute stage:

blepharitis - usually unilateral
oedema of eyelid
serous ocular discharge

Sub-acute to chronic stage:

ulcers at eyelid margins
secondary infection changes discharge to mucopurrulent
adhesion of upper an lower eyelids with a thick scab

uncommon sequelae:

keratitis
corneal ulceration
anterior uveitis
panophthalmitis and rupture of the globe
eyelid scarring causing deformity of margin

Diagnosis

Clinical examination -lesions as above
Histopathology of scabs or scrapings from the eyelid ulcers
presence of Bollinger bodies (eosinophilic intracytoplasmic inclusion bodies)

5.5 Ring/legband constriction

Leg bands are commonly used for individual identification of birds.

Possible problems:

Band caught on wire or protruding objects
Inappropriately sized bands
Excessive skin scale build up beneath ring
Swelling beneath ring with trauma to tarsometatarsal soft tissues
Large parrots constrict ring with their beak

Clinical Signs

band not able to be moved or manipulated on leg
Swelling distal to the ring
Cyanosis of distal leg and foot
necrosis of leg distal to ring
lameness

Diagnosis

Clinical examination

5.6 Arthritis

Several species of bacteria have been isolated from arthritic changes in birds. Septic arthritis may occur as an extension from air sacculitis or a secondary complication of open fractures, pododermatitis or penetrating joint injuries. Some reports have indicated a septicaemia as a source of joint infection.

Most common bacteria isolated

Staphylococcus
E. coli
Salmonella spp.
Mycobacterium avium
Pasteurella multocida
Erysipelas rhusiopathiae (geese and ducks)
Actinobacillus spp.

Clinical Signs

usually the distal joints of extremities
swollen joints
lameness

Diagnosis

Clinical examination
check for wounds, fractures, pododermatitis, air sac disease
Joint aspirate
cytology
Gram stain, C&S
Radiograph
joint effusion
osteolysis is major change
acute infection - minimal periosteal reaction
chronic infection see evidence of periosteal reaction

5.7 Cnemidocoptes

This is discussed elsewhere in these notes.

Other Causes

Other problems have been reported but are uncommon and are usually differentiated from the diseases above by close examination

5.8 Rayon/nylon threads around toes

5.9 Faecal Concretion on toes

5.10 Toe Gangrene

7. Legs

Any injury or infection on a leg may cause swelling. The common problems to consider have been discussed in more detail above, they are:

7.1 Trauma

fracture
luxation

7.2 Nutritional deficiency

Vitamin A
Calcium
Phosphorus

7.3 Synovial Gout

8. Periophthalmic

8.1 Periorbital sinus infection

The periorbital sinus does not have a bony covering as seen in mammals. Any fluid/exudate accumulation in the sinus will cause the sinus to swell and may lead to exophthalmos. This is often mistaken, by clients, for an eye problem and the birds will have been treated with an ophthalmic ointment prior to presentation.

8.2 Normal physiological inflation of periorbital sinus

This may occasionally be seen as a display of aggression in some psittacines

8.3 Poxvirus

Clinical Signs

blepharitis (oedema eyelid)
serous ocular discharge
eye can become ulcerated and severely infected

8.4 Hypovitaminosis A

Clinical Signs

mild periorbital and conjunctival swelling
nasal discharge
choanal/palatine abscesses
sneezing
dry oral membranes

8.5 Neoplasia/granuloma

There are a number of tumours or granulomas that are difficult to differentiate visually or macroscopically. Those reported are:

Lymphoreticular
Optic nerve glioma
Orbital round cell sarcoma
Pituitary chromophobe tumour
Mycobacterium
Aspergillosis
Cryptococcosis

Diagnosis

Biopsy for Histopathology and Cytology
impression smears
Cytology -Diff Quik, Wright's, Giemsa
Bacteria - Gram, MZN,
Cryptococcus - India Ink

9. Skin/ Subcutaneous

9.1 Bacterial/Fungal disease

Primary bacterial dermatitis is rare, but dermatitis due to fungi has been reported:
Trichophyton
lesions in wattle, comb, legs of galliformes
Microsporum gypseum
Canaries & Budgerigars
Candida
in gallinaceous birds

Clinical Signs

Erythema or other skin discolouration
Hyperkeratosis, hyperpigmentation
Feather damage
moist areas of excoriation

Diagnosis

skin scraping and appropriate stain as in mammals

9.2 Mosquito Bite

Clinical Signs

Areas of erythema on featherless locations (cere, eyelids, legs and feet)
Pruritus
May develop into Poxvirus lesions

Diagnosis

Clinical examination
Observation
History of exposure to Mosquitos (observe just on dusk)

9.3 Hyperkeratosis

Common causes

malnutrition
Viral Infection
Circovirus (PBFD)
Polyomavirus

9.4 Chronic Ulcerative Dermatitis

Clinical Signs

oedematous, ulceration and exudation
hyperaemia
chronic in nature
may be associated with
tumours (lipoma, papilloma, Squamous Cell Carcinoma)

abscesses	unhealed wounds
hernias	Diabetes Mellitus
nephritis	hepatitis
giardiasis	hypovitaminosis E

Pruritic Polyfolliculosis

Diagnosis

Clinical examination
Skin Scraping (Gram, Diff Quik)
Dietary History
CBC + Biochemical Profile
Faecal Flotation & Warm Saline Smear
Biopsy + Histopathology

9.5 Xanthomatosis

This lesion appears as yellow, diffuse patches in the skin. They are accumulations of macrophages full of lipid material, giant cells and cholesterol clefts. They are thought to be a response to chronic inflammation locally, especially pressure of underlying lipomas on legs and ventral abdomen. The most common location for xanthomas in parrots is the medial surface of the extremities of the wings.

Clinical Signs

yellow, featherless patch of thickened skin
with time they may ulcerate and be haemorrhagic
the skin in this area is quite friable
drooping of affected wing
yellow discolouration and thickening of the skin of parrots and gallinaceous birds.
Has the appearance of fatty infiltration into the skin.
The skin loses its integrity and becomes quite friable.
Surgical removal may be possible depending on the size of the mass.
Often associated concurrently with abdominal hernia.

Diagnosis

Examination
Fine Needle Aspirate of lesion

Fat globules present
macrophages containing vacuoles
lipids present (Sudan III stain orange)
cholesterol crystals
variable sized, angular, translucent, often in stacks
multinucleated giant cells
Serum cholesterol levels raised

9.6 Lipomas

This is often one manifestation of poor nutrition and is often associated with obesity.

History

diet rich in oil or fat.
More common in desert species evolved to survive with poor food availability
eg. Budgerigar, Galah, Sulphur Crested Cockatoo

Clinical Signs

Bird has large subcutaneous fat deposits on examination.
Commonly affected sites:
pectoral region, just ventral to thoracic inlet
ventral thorax and abdomen
ventrally between the legs
perineum

Diagnosis

Clinical examination
Fine Needle Aspirate – same finding as in xanthoma above
Evaluate all dietary components on the basis of what items are eaten as well as what is provided.

(a) High Protein diet

Many diets offered to birds have unbalanced Protein to energy ratios. The ideal ratio of protein (gm):energy (kilojoules) is 5:1. Commercial diets developed for meat producing birds (turkey or chicken growing formulations) have much higher ratios - up to 19:1. These types of diet should be avoided. High protein levels will cause skeletal deformities in growing birds but their presence also causes a dilution of the energy levels and will result in weak birds that appear to be sleeping, but are really energy deficient.

(b) Low carbohydrate content of diet

Even in a balanced diet, the bird may preferentially eat one component that is low in carbohydrate. This is usually seen as a bird that consumes items such as sunflower seed almost to the exclusion of all other food. It may also be a problem in diets that dilute the carbohydrate level by the inclusion of higher levels of protein or fibre. The provision of high quality, balanced homemade and commercial diets is helping to diminish the incidence of this problem.

(c) Excess fat

This is the most common dietary imbalance seen in caged birds. The foods that are high in fat seem to be more palatable and attractive to some birds. These birds are usually sedentary in nature and become more so as the side effects of low exercise levels, combined with a high fat diet become evident. These birds are obese, often have visible lipomas and eventually develop fatty livers.

10. Tongue

The tongue is rarely involved in disease.

10.1 Hyperkeratosis of tongue tip

This is occasionally seen in passerines. It is not clinically significant other than it needs regular trimming as it may interfere with prehension and feeding

10.2 Trichomoniasis

Trichomonads may cause problems in the tongue occasionally in the Canary.

Clinical Signs

Ulceration and necrosis of the tongue may occur
Mucoid discharge on beak and face
Wasting

Diagnosis

Examination of mouth
Wet preparation of scraping from tongue (warm saline mount)

10.3 Hypovitaminosis A

Clinical Signs

mild periorbital and conjunctival swelling
nasal discharge
choanal/palatine abscesses (also examine sublingual area closely)
sneezing
dry oral membranes

Diagnosis

Dietary history
Therapeutic trial with parenteral Vitamin A