Condition: Facial swelling and fistula

Photo from Archer et al, NZVJ, page 307

Symptoms: There are various symptoms (clinical signs) that are found depending on how far the problem has progressed.

Often the initial symptom is a swelling on the side of the head near the outside corner of the eye, which often looks like an abscess. If lanced or cut open it usually contains dark green matter (from rotten grass) and gas, as it is coming from rotten or putrid food that has worked it's way upwards from the back corner of the mouth.

In some cases the swelling has burst and then becomes a discharging fistula, which is a sinus tract that sometimes leaks material through an opening in the skin.

In other cases when food builds up in the corner of the mouth the cheek has a large mass of rotten food present, and sometimes this will burst out through the side of the cheek and jaw – resulting in a large hole in the cheek.

Cause: The cause is thought to be malocclusion of the back molar teeth, where the rear molar teeth are not aligned correctly – which damages the cheek and can allow food to build up between the jaw and the cheek.

When food builds up in the cheek and becomes rotten, the infected material often works its way upwards and comes out near the eye where it forms a large swelling or develops into a discharging fistula.

Unfortunately it often tends to be missed in the early stages, so usually becomes chronic with infection of the jaw bone and a chronic fistula that discharges rotten food.

When this condition is identified, it is advisable to seek veterinary treatment, as early treatment may limit the amount of damage that occurs.

Occurrence: The Kunekune is the only breed of pig that seems to have this problem, so it is suspected that there is a genetic risk factor.

The Kunekune has a brachycephalic shape to the head which may be contributing to the incidence. There have been no reports of similar issues in the commercial Berkshire breed which also can have a shortened head and snout, or in other 'miniature' breeds such as the pot-bellied pig overseas.

The true incidence of this problem is unknown, as it may go unnoticed in some kunekunes or is not reported. Once the issue starts, it is unlikely to self-resolve, and in moderate to severe cases may cause ongoing issues and result in the pig being euthanised due to animal welfare concerns.

There are a number of contributing factors that may influence the occurrence of food impaction leading to facial swelling and fistulas in Kunekune pigs:

- A relatively small gene pool from when the Kunekune was 'saved from extinction' (approx. 50 pigs in the 1980's).
- Inbreeding leading to a higher frequency of genetic based problems.
- The small stature and relatively short head and snout (brachycephalic) may increase the risk of malocclusion of some of the molars.
- Once food impaction is triggered, chronic damage is likely to be irreversible and may cause ongoing infections that damage the jaw.

Anecdotal reports of cases where the Kunekune was a breeding pig indicated that the condition didn't usually show up until the pig was around 3-4+ years old, by which stage it had already produced offspring that may carry a genetic predisposition for the development of the condition. It can occur in either sows or boars and at any age.

Although obvious symptoms may occur on one side of the head, investigation has shown that both sides of the head are often affected to some degree.

Recommendations:

1. Provide information on facial swelling and fistulas to help Kunekune pig owners identify the condition.
2. Provide information on identifying heritable problems, and raising the issue with Kunekune breeders of the risks of inbreeding (which can increase the frequency of genetic problems)
3. Identify affected individual Kunekunes and discourage breeding of that immediate bloodline.
4. Look at ways to promote screening the teeth of kunekune pigs prior to breeding to identify if there are malocclusions present that may preclude them from being suitable for breeding.

Summary of scientific articles:

Massey University study

In a study of 5 cases of adult kunekunes with similar issues, a comprehensive investigation was carried out as it was recognised that this was something that appeared to be unique to kunekunes.

Symptoms varied from facial swelling of the cheek or between the eye and ear to a chronic discharging fistula, with changes to the lower jaw and other facial structures. Investigations included

examination under anaesthesia, and a variety of treatments. In most cases the pig was euthanised due to ongoing problems, which allowed extensive examination to take place including CT scans and X-rays, plus postmortem examination of the skull and tissues to determine the extent of the changes.

Inside the mouth of each affected pig there was a hole in the lower jaw bone next to the last molar tooth. The food packed into the angle of the jaw had resulted in infection in the jaw bone. The rotten food material then tracked through the soft tissues to form a subcutaneous abscess, which eventually ruptured resulting in a draining fistula on the outside of the head.

Overall effect on the general health of the pigs varied, with some having issues with eating and weight loss, while in at least one case there was little general effect on the pig apart from a small chronic discharging fistula.

During the study the NZ Kunekune Association was contacted and responses received from some pig breeders or owners that had similar issues, which helped identify how widespread the problem might be in the breed.

Of the Kunekunes included in the study all had advanced changes on one side of the head, plus other changes on the other side of the head - indicating that it was a bilateral problem and unlikely to be due to a simple physical cause such as something they had eaten that had damaged the mouth. In most cases the last molar teeth were not positioned well and may have been part of the cause, potentially causing cheek and gum injuries.

Due to the relatively small number of Kunekunes contributing to the population gene pool in NZ and the inbreeding that had occurred, it was identified that this may have been a significant contributing factor.

In one case with an affected boar pig, 2 adult sow litter mates were examined and found normal. In another case of a sow affected, 2 piglets of a recent litter showed possible mouth lesions indicative of possible teeth problems.

One of the conclusions was: If malformation of the lower jaw and abnormally positioned teeth were related to the development of the issues found, then genes responsible for the small size and short length of the snout in Kunekune pigs may play a role.

Archer RM, Weston JF, Herdan CL & Owen MC. **Facial swelling and discharging lesions associated with abnormalities of the mandible in kunekune pigs**. *New Zealand Veterinary Journal* 60(5), 305–309, 2012.

Washington State University case

A kunekune sow was presented with a swelling and fistula on one side of the head. Physical examination under anaesthetic and CT scans showed severe changes to the jawbone with impacted food and infection causing chronic damage. The proposed cause was malocclusion of the teeth resulting in food impaction and subsequent infection of the jaw bone.

Baumgardner R, Ziegler J, Shannon D, Mattoon J, Fisk E, Eckstrand C. **Mandibular feed impaction resulting in fistulous tract development in a kunekune sow** (Sus scrofa domesticus). *Journal of Exotic Pet Medicine* 35 (2020) 80-81.