

Modified Thomas splint-cast use in cattle limb fractures: characteristics of long-term survival of 185 cases (2013-2021)

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Objectives

Traumatic limb fractures are an important cause of premature animal loss. Generally, the most cost-efficient and humane way to handle injured cattle is emergency slaughter on site. However, in the EU, this is only an option if the animal has an acute injury making transport impossible for welfare reasons, is in a further healthy condition, and has not received any medication with a withdrawal period (Eurlex 2004). Furthermore, given the cost involved, it is generally only carried out on animals with a certain weight to avoid incurring more costs than can be gained by slaughtering.

For calves and animals under withdrawal period, salvage options are limited and often expensive. Walking-casts are limited to lower limb fractures and have a weight limit in general. Repair through surgical reduction with internal or external fixation is costly and specialized, also due to the need for general anesthesia. External coaptation methods like the Thomas splint, initially developed for humans, stay relevant to date in a modified form for cattle due to their low cost and relative ease of use on-farm. Studies differ in opinion on their success rate, and relatively few data are available on long-term success to slaughter which makes treatment decisions hard. As such, in order to evaluate survival rate and treatment success, the aim of this study was to describe the long-term outcome and related characteristics of cattle with limb fractures treated with a modified Thomas splint-cast (MTSC), by use of their medical records and national cattle database (SANITEL) data.

Materials and methods

To perform this study, the hospital file of 211 cases of cattle having received a MTSC between September 2013 and December 2021 were retrieved from the clinic database system (SAP). After removal of duplicates (9), MTSC use for other reasons than fracture (5) and animals not retrievable in the national database (12), 185 cases were withheld. Data retrieved included gender, breed, birth date, site of fracture, time since fracture and cause of fracture. From the national herd database (SANITEL), date and type of death was retrieved to perform follow-up until 10 weeks after placement of the MTSC for all animals and a follow-up until death or slaughter for animals deceased.

Results

In 80 % of cases, cattle that received a MTSC were presented for a tibial fracture. Of all animals treated with a MTSC, 42.16 % survived to be slaughtered, 41.08 % died naturally or were euthanized, and 12.43 % was still alive at the time of data retrieval (4.32% was lost to follow-up). Of the animals that did not survive until slaughter, 84.21 % died within 10 weeks after placement of the MTSC, with significantly higher odds of non-survival >10

weeks if their weight was above 275 kg (OR 2.59 $p < 0.05$). There was no gender difference on survival. Cause of fracture was recorded in 49 % of cases: the main risks were manipulation (15.7%) and the placement on pasture (13%). Twenty-five percent of fractures where a time since fracture was known were presented two or more days after fracture, with outliers to 15 days after initial fracture.

Conclusions

MTSC have their use in practice as a salvage procedure to raise young animals that suffered from a limb fracture until an acceptable slaughter weight can be reached. The prognosis drops with increasing weight, and placement of MTSC should as such be reserved for young animals below 275 kgs. Animals were presented for cast placement only after two or more days in 25 % of all cases. Even though prognosis was not different in this study, this could be a severe welfare issue for the affected animals.

Key words

Cattle; Limb fractures; Trauma; Modified Thomas Splint-Cast