*Evaluation of the Penis Tie-Down Method to Prepare Teaser Bulls

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Introduction

Estrus detection is one of the major problems in artificial insemination programs. The use of sterilized (teaser) bulls has been shown to be helpful in detecting estrus (1). Some of the objectives in producing teaser bulls are:

1. Prevent the teaser bull from settling cows.
2. Prevent venereal transmission of infectious diseases such as vibriosis and trichomoniosis.
3. Maintain good libido in the bull.
4. Minimal cost of the operation.

Numerous approaches to teaser bull surgery have been developed (3,4,5,6,7,9,10,11,12). Each method has certain advantages and disadvantages regarding the above criteria. Although many claims are made regarding the virtues of particular methods, follow-up reports of results on large numbers of bulls are lacking. The purpose of this report is to present the results of a relatively large number of unselected teaser bulls operated by the tie-down method.

Surgical Procedure

The surgical procedure was a modification of techniques previously described by Smith (9) and Belling (3).

Bulls were operated in lateral recumbency on an operating table or in dorsal recumbency with legs secured to a fence or gate. Most bulls were tranquilized with Rompun† at the dosage of approximately 0.1 mg/kg body weight. Anesthesia was accomplished by local infiltration along the incision line with 2% procaine or lidocaine.

After clipping, shaving and surgical preparation of the field, a 16 cm incision was made approximately 2 cm lateral to the midline between the scrotum and prepucial orifice beginning about 6 cm anterior to the scrotum. Major vessels were avoided so that minimal or no ligation is necessary. The incision was continued down to the linea alba which was exposed for a length of about 16 cm.

The penis was then pulled through the incision and the attachment of the prepucial membrane to the penis (fornix) was located (Figure 1). Posterior to that point, the elastic connective tissue was dissected free from the tunica albuginea of the dorsal aspect of the penis. The urethra was easily palpated in a groove on the ventral aspect of the penis so that it was not invaded.

The bare surface of the dorsal aspect of the penis was then apposed to the bare surface of the linea alba. Prior to suturing, the penis was positioned so the glans penis was not protruding through the prepucial orifice. Number 3 size multifilament synthetic sutures‡ were then placed through the linea alba and the dorsal one-fourth of the penis. The suture passed through the tunica albiginea and corpus caveruosus penis. Care was taken not to enter the urethra or prepucial membrane. Four to six interrupted sutures were placed approximately 2 to 3 cm apart (Figure 1). The subcutaneous tissues were closed with no. 0 gut in a simple continuous pattern and the skin was closed with no. 3 multifilament synthetic sutures in a continuous horizontal mattress pattern. This fixation prevented bulls from protruding the penis and resulted in permanent phimosis as the penis healed to the linea alba. In addition, the multifilament synthetic sutures were left permanently in place.

In every case, bulls also had a vasectomy or cauda-epididymectomy performed. This was done as an assurance that the bulls were sterile in the event the penis broke loose. Vasectomy was done according to the method of Tharp (11). Cauda-epididymectomy was performed by making an incision through the skin and tunic over the tail of each epididymis. The epididymis was then exposed through the incision and excised with a scissors or electrocautery. Since the epididymis may recanulate and transport sperm after simple excision (12), all recent cases have been ligated proximal to the point of excision. The ages of bulls at the time of surgery ranged from 8 months to 18 months. Surgery was usually completed within about 45 minutes. No antibiotics were given and the owners were instructed to give the bulls two weeks of sexual rest. Breeds included Hereford, Angus, Charolais, Jersey, Holstein and crossbred.

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‡Braunamid–B. Braun Melsungen AG, W. Germany.

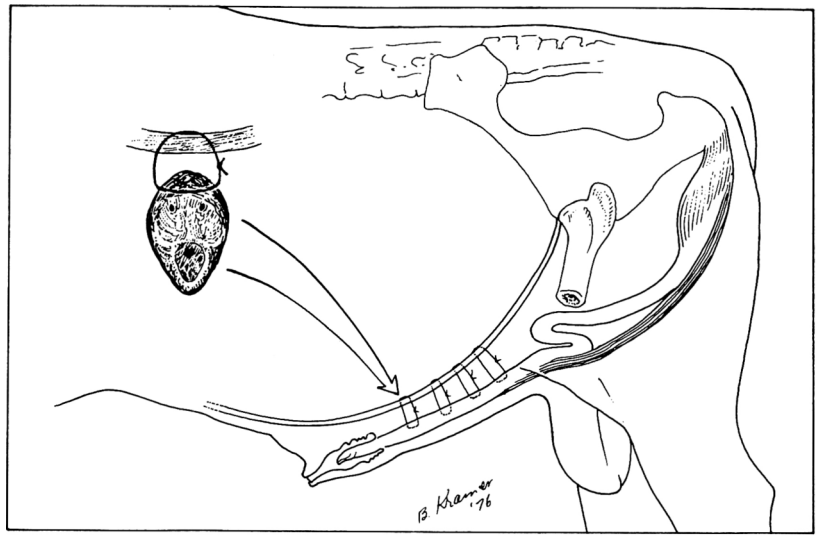

Figure 1. Schematic showing area of suture placement in penis tie-down surgery.

Results

Records were retrieved on 41 bulls operated by this method and follow-up data were obtained on 37 bulls. Performance of the bulls was evaluated by telephone interviews and a written questionnaire to the owners or herdsmen. The questions asked were:

1. The length of time the bull maintained good libido.
2. Whether the bull was helpful in heat detection.
3. How many cows the bull was used with in one season.
4. Whether a marking device was used.
5. The physical condition of the bull.
6. Whether the bull injured cows.
7. Reasons for failure.

They were also asked their opinions on origin of the bull, color, size, disposition and breed preference.

The results are summarized in Tables 1 and 2. Thirty-one (84%) were reported to be helpful in detecting estrus and 6 (16%) were reported to be not helpful in the overall breeding program. Of the 6, only 4 were reported to lack libido. Twenty-seven bulls (79%) were reported to have saved labor, 7 (21%) did not save labor and 3 drew no conclusion. Most of the bulls were used with 20 to 30 cows at a time, but in most instances, several groups of cows were put with the bull each season. Three of the bulls reported to be not helpful were used on 40, 50, and 70 cows at a time. These bulls lost a considerable amount of weight.

Fourteen bulls (42%) were reported to have good libido indefinitely, based on follow-ups of at least 1½ years. Ten bulls (30%) maintained good libido for 1 to 1½ years. Five bulls (15%) maintained libido for one breeding season and 4 bulls (12%) maintained libido for less than 6 weeks (Table 1).

Discussion

Only 4 bulls (12%) in the survey were completely useless. Two of these bulls never had libido after surgery and may not have had libido prior to surgery. Osborne found that 10 out of 60 bulls from an Angus herd scored 0 on a scale of 0 to 10 in a test of libido and serving ability (8). Since libido may be that poor in unselected bulls, it is likely that some bulls will not work when prepared as teasers by any method. Some of the bulls in this series were purchased at a stockyard where no background information was available. Others were the culls from the bull lot. Some of these bulls were not very masculine prior to surgery.

An unexpected finding was the number of bulls that developed serious problems other than loss of

Table 1

Penis Fixation

37 Bulls

Helpful	Not Helpful
31	6

Duration of Libido

Length of time	No. of Bulls
Indefinitely (over 1-1/2 years)	14
1 to 1-1/2 years	10
1 breeding season	5
Less than 6 weeks	4
Not reported	4

Table 2

Problems	No. of Bulls
Weight loss	2
Postoperative complications	1
Death	1
Lameness	2
Mean	3
Injured cows	2

libido (Table 2). One bull which had been sutured with gut rather than multifilament synthetic suture broke his penis loose; he was reoperated using multifilament synthetic suture and worked satisfactorily. A second bull extended his penis for a few cm following surgery. It was not determined whether sutures broke or the penis was mistakenly sutured in the extended position. A few bulls developed postoperative swellings which were seromas and none became infected. The majority of bulls experienced weight loss, sometimes to the extent that it impaired the bull's health. One bull died unexpectedly due to an undiagnosed cause. Two bulls were lost due to severe lameness. Three bulls became mean and were unsafe to be near, and two bulls grew too large and injured cows. It is probable that some of these problems were related to the excessive use these bulls received. They had more exposure and activity than any other cattle in the herds. Not counting surgical complications, 10 bulls (27%) were eliminated for reasons other than libido.

Opinions varied regarding breed preference, use of marking devices and color. Most agreed that the bull should not be oversized, should have a quiet disposition, and should originate from their own herd.

From these results it is concluded that some teaser bulls operated by this method lose libido in time. However, only 4 (12%) were of no value for at least one breeding season. Other problems occurred with 10 teaser bulls (27%) which probably were not related to the type of surgical procedure.

It was suspected that some of the four bulls which were of no value did not have good libido prior to surgery. It is recommended that teaser bulls originate from within the herd so that infectious diseases are not introduced and the libido of the bull can be predetermined. Since a large number of bulls left the herd for reasons unrelated to the surgical procedure, teaser bulls should be regarded as short-term animals. It may be most efficient to use a teaser bull for only one breeding season and replace him the next year. This would eliminate the cost of maintaining the animal the extra months and increase the chances of having a workable bull to use at the start of the breeding season. In order to make this practical, inexpensive simple procedures must be used. The penis tie-down method would fulfill these criteria.

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