UX, supporting tape in rectus sheath, new closure technique of linea alba

Objective
To present a new abdominal closure technique (UX)
and to evaluate the strength of the UX compared to routine continuous suture.

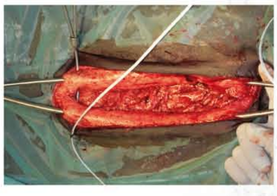
Materials and method
- Twenty warmblood horses euthanized for orthopedic reasons
- 25 cm midline incision
- Placement of rubber inflatable tube inside abdomen
- Group 1: closure with continuous suture pattern (polyglactin USP 5)
- Group 2: closure with UX technique (mersilene 5 mm tape).
- Tube inflation untill failure
- Failure mode and failure pressure recorded
- Statistics: two-tailed unpaired t-test. ($P<0.05$).

UX technique
- Two tunnelers are placed medially in both rectus sheaths (fig 1).
- Tape inserted in continuous pattern using modified buhner needle
- Tunnelers are incorporated in the full thickness bite.
- Tape is fixed to tunneler at the caudal end of the wound.
- By withdrawing the tunnelers, the U-part (yellow) of the tape is placed in the rectus sheath
- The end is understitched and secured with a small suture.


Instruments

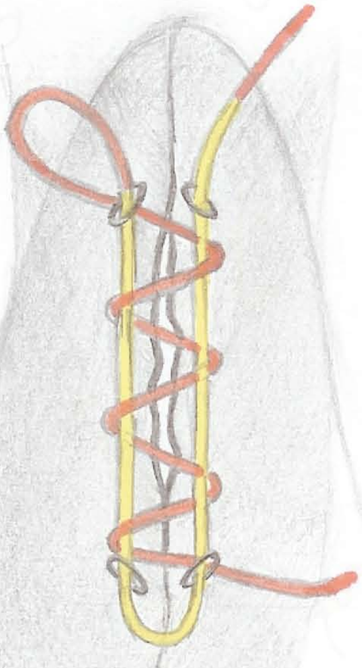

Introduction tunneler

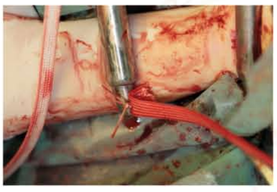

Placement tunneler


Start X-part tape


X-part tape half way

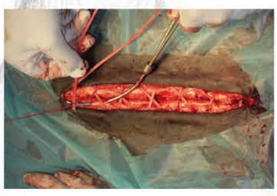

X-part tape finished

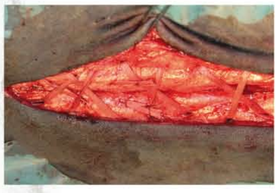



Fixation tape too tunneler


U-part tape placed

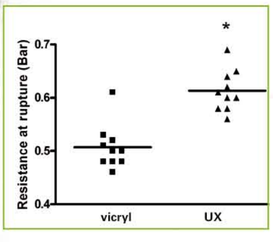

Loosely tightened


Under stitch


Secured end


Bursting strength

Results



GROUP 1:
Failure at 0.51 +/- 0.04
- 9/10 at suture site
  - 4: tearing linea alba
  - 3: knot failure
  - 2: suture failure
- 1/10 at musculotendinous junction

GROUP 2:
Failure at 0.61 +/- 0.04
- 10/10 at musculotendinous junction

Conclusion
The UX technique has a significant ($P<0.05$) greater tensile strength than routine continuous suture.
Intra rectus sheath tape incorporated in the closure of midline laparotomies provides tension relieve and additional support in the process of healing.

Clinical applications
Colic horses with a high risk for herniation.
Abdominal surgery in late gestation mares.
Surgical treatment of incisional hernias.

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