

Critical appraisal – Barrier et al

<b>Introduction</b>	
Are the aims clearly stated?	Yes. To investigate if meloxicam administration prior to commencing caesarean section in beef cows altered lying behaviour
<b>Methods</b>	
Is the study design suitable for the aims?	Yes
Which population was studied?	<p>Beef cows (75.5% Charolais), in France, needing non elective surgery with a live single calf that could not be delivered vaginally and not previously had a c section. The cause of the dystocia was not pathological, there was no additional disease or injury that could cause pain/affect recovery and attempts to deliver the calf had not exceeded 15 minutes of traction by more than two people. The surgery commenced between 0600 and 1400.</p> <p>The exclusion criteria included:                      Requirement for sedation,                      Recumbancy,                      Previous (in the last 24 hours)administration of:                      NSAIDS, alpha 2 agonists, other sedatives,                      anaesthetics or analgesics                      Previous administration of short acting corticosteroids within the last 14 days or long acting corticosteroids in the last 30 days.</p>
Were the treatments randomly allocated? If yes, how was the randomisation done?	<p>The manuscript states this trial used a /blind randomised schedule blocked by parity’.</p> <p>The method of achieving the randomisation is not stated.</p>
Were the groups comparable prior to intervention?	Yes, though no statistical comparisons made.

Was the person who administered the interventions blinded?	No details were provided about how or if blinding was done. A placebo was used but no details about what this was or how it was administered.
Is it clear what measurements were carried out in the study?	<p>Time spend lying (%) per time period (0-8h, 8-16h, 16-24h, 24-32h, 32-40h, 40-48h, 48-68h)</p> <p>Number of steps per hour per each time period (as above)</p> <p>Actual time spent lying (%) per each time period (as above)</p> <p>Average number of lying bouts (counts/hour) per time period (as above)</p> <p>Pain at surgical site pre and post surgery using a 4-level scoring system</p>
<p>Were the correct measurements chosen?</p> <p>Do they reflect (or are they strongly related to) the outcome of interest?</p>	The measurements chosen are suitable to answer the aim of the study 'to investigate effect of meloxicam on behaviour post caesarean'. However it is not clear how lying behaviour at the time of parturition is related to pain and therefore clear inferences on the effect of meloxicam on pain are difficult to draw.
<p>Were previously established validated methods used to make the measurements?</p> <p>(e.g. Glasgow pain score, International Units etc)</p>	<p>The use of accelerometers to determine lying time and steps have been validated. However, it remains unclear if this is a valid indicator of pain or welfare in cows post operatively.</p> <p>There was not enough detail given about the pain scoring system used.</p>
What outcomes were measured?	As above

Are the outcomes clinically relevant?	This is unclear
Were the outcomes assessed blind?	No details were provided about how or if blinding was done.
Are the statistical methods described?	Yes
Was the statistical significance level stated?	No
Was the sample size justified?	No
Was ethical approval obtained?	Yes by the French Research ethics committee
Are the methods described in enough detail that you could repeat them?	No, due to lack of information about the methods of randomisation and blinding used, the type of placebo given and the pain scoring system used
<b>Results</b>	
Were the basic data adequately described?	Lying behaviour and steps were adequately described. However, results of pain score assessment were not presented.
Do the numbers add up?	Yes
Are all subjects accounted for?	Yes
Was the statistical significance (p value) stated in the results?	Yes
Is this consistent with the methods? (It should be stated in the sample size or power calculation)	The level was not described in the methods.
Were any side effects of the intervention reported if applicable?	No

<p>What were the main findings/key results?</p>	<p>Cows that received meloxicam had significantly more lying bouts in 0-8 hours, 8-16 hours and 16-24 hours than the control group. (p=0.021)</p> <p>The total number of lying bouts decreased over time for both groups</p> <p>Cows that received meloxicam spent more time lying in 0-8 hours and 8-16 hours compared to the control group but this was not significant(p=0.55).</p> <p>The time spent lying decreased over time for both groups.</p> <p>There was no effect of treatment on the average number of steps between groups (p=0.11).</p> <p>All cows took more steps in 0-8h and 16-24h period (p&lt;0.001).</p>
<p><b>Discussion and conclusion</b></p>	
<p>What do the main findings/key results mean?</p>	<p>The interpretation of this study is difficult as it is unknown how the measures used reflect pain in cows post operatively. The measures used have not been validated and our understanding of lying behaviours in cows post partum and following surgery is limited.</p> <p>In this study the use of meloxicam led to some differences between the groups but this was only significant in terms of lying bouts. It may be that these alterations were due to an analgesic effect of meloxicam but this can not be certain.</p>
<p>Are the negative findings discussed?</p> <p>How are the negative findings interpreted?</p>	<p>The negative findings are discussed to some degree. The lack of significance between treatment groups for lying time is not fully interpreted.</p> <p>The similarities and differences to other published</p>

	studies are presented.
Does the discussion reflect the results?	<p>To some degree though the focus of the discussion is on behavior and how meloxicam may affect this. Some interpretation with regards to pain is also given and the uncertainty regarding how to assess pain is highlighted.</p> <p>The limitations of the study are not covered adequately in the discussion which may lead to uncertainties regarding the findings.</p>
<b>Interpretation</b>	
<p>What are the clinical implications of this study?</p> <p>Are the subjects in the study similar to those in the BET/your own?</p>	<p>Meloxicam may affect lying behavior in some cows, the significance of this with respect to pain is unclear.</p> <p>The generalisability of these results to all cattle is not possible. These were all beef cattle (mostly Charolais but other breeds not reported) and had had very little intervention before having surgery. This may not reflect a large proportion of cows treated in practice</p>
<b>General</b>	
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