A Prospective, Non-Controlled, Randomised, Clinical Trial of Abdominal Adhesions following Coeliotomy: Do Risk Factors Predispose to Surgical, Physiological and Histopathological Aetiologies? - An Analytical Study in Rabbit Models

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Abstract:

Abstract Keywords: Abdominal Adhesion; Coeliotomy; Aetiology; Surgery; Physiology; Histopathology; Rabbit

Background: Peritoneal adhesions are serious postoperative concern of coeliotomy and other abdominal surgeries, and can result in chronic pain, infertility, or potentially fatal bowel obstruction. Therapeutic and preventive measures have reduced adhesion formation to variable degrees in preclinical studies and clinical trials; however, there is incomprehensible understanding why the incidence of adhesion remains prominent in rabbits and human, at general surgery and gynaecological patients, respectively. Objectives: We adopted a prospective, non-controlled, randomised clinical trial to study potential risk factors that may predispose to coeliotomy operations, and to discover and analyze whether surgical, physiological and histopathological aetiology plays an influential role in abdominal adhesion formation. Methods: Thirty female adult rabbits (n = 30) with bodyweight of 1055 - 2910 gm (1965 ± 97.4 gm) and age of 63 - 132 days (111 ± 5.5 days) were subject to this study. The rabbits were randomly categorized into 2 groups; surgical intervention (n = 28) and control group (n = 2). Animals of the surgical intervention group underwent a median coeliotomy, whereas control group had no intervention. On the 10th and 17th postoperative day after surgery, gross observation and histopathological examination were carried out for each wound outcome. Results: Eighteen (n = 18/28) incisions (64.3%) developed a healthy fibrous scar without any serious complication. Of such incisions, 9 cases (32.1%) were each observed at days 10 and 17. Eight (n = 8/28) cases of abdominal adhesion (28.6%) were seen among the interventional group, of such; 4 cases (14.3%) were presented with adhesions at both days 10 and 17. Conclusions: Abdominal adhesions may elicit by a synergistic interaction of surgical, physiological and histopathological aetiology. Genetics, breeds, biomaterials, and technical considerations are questionable of their effects, and arise of an utmost interest to speculate as risk factors.

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Published In:

EC VETERINARY SCIENCE , 4.2 , 90-100