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C. Pace Ravrot[A*], E. Berg Assendrup[A*], I. Reichler[B], A. Wehrend[C], J. Uhlmann[D], K Thejll Kirchhoff[E], E. Vigholt[F], S. Goericke-Pesch[G]
[A]Section for Veterinary Reproduction and Obstetrics, University of Copenhagen, Denmark, [B] Clinic of Reproductive Medicine, Vetsuisse Faculty, University of Zurich, Switzerland, [C]Clinic for Obstetrics, Gynecology and Andrology for Large und Small Animals, Justus-Liebig-University Gießen, Germany, [D]Veterinary Clinic for Small Animal Reproduction, Bernau-Schönow, Germany, [E]Dyrlægegruppen Frijsenborg, Hammel, Denmark, [F]Vigholt, Risskov, Denmark, [G]Reproductive Unit – Small Animals, University of Veterinary Medicine, Hannover, Germany
* contributed equally
E-mail: Sandra.Goericke-Pesch@tiho-hannover.de

Introduction and aim: Dystocia can be of maternal or fetal origin. Certain breed predispositions have been discussed concerning dystocia of maternal origin. Scottish Terrier (ST) is considered to be one of the predisposed breeds due to dorsoventral flattening of the pelvis (1). However, caesarean section (CS) rates vary highly among countries from 34% in US to 60% in UK and Denmark. The aim of the study was to investigate the incidence of dystocia in different countries and to determine whether correlations between physical traits and pelvic confirmation existed.
Materials and Methods: ST with a breeding history were recruited in Germany, Scandinavia and Switzerland. Participating owners had to complete an online questionnaire for each bitch about details of the breeding history (including natural delivery, NB/ CS; reason for dystocia). External parameters, as body weight, height at withers, length and width of the pelvis were measured. Additionally, radiographic projections of the pelvis were taken in two projections to evaluate pelvic conformation by the following pelvimetric parameters: Conjugata vera (CV), Diameter verticalis (DV), Conjugata diagonalis (CD), Diameter transversa (DT); furthermore CV/DT ratio and area of the pelvic inlet were calculated. Investigators were blinded to the dog's reproductive history. Statistical analysis (t-test, Mann Whitney) was performed to compare NB bitches with CS bitches (in general/due to obstruction, OCS).
Results and Discussion: Questionnaire data were obtained from 68, external dimensions and results of pelvimetry from 64 STs. The overall prevalence of OCS was 13%. A negative correlation between external and pelvimetric parameters was identified: large external measures were associated with smaller pelvimetric results. Bitches with reported OCS had significantly smaller CV/DT ratio than NB bitches indicating an increased degree of dorsoventral pelvic flattening. Although puppy body weight was higher in litters with CS, relative puppy weight (%) and litter size did not differ between NB and OCS. Significant differences between countries were identified. Countries with higher occurrence of dystocia generally had larger sized dogs with smaller pelvic measurements. An increased risk of delivering by CS was seen in bitches with a sire born by CS.
Conclusion: Different to an earlier study (2), no correlation between external traits and pelvimetric dimensions or risk for CS due to obstruction was found. However, as bitches with OCD had lower CV/DT ratio, this parameter might be used to predict the risk for obstructive dystocia due to dorsoventral flattening in STs and to select breeding bitches.
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References:
1. Eneroth A et al. J Small Anim Pract. 1999,40, 257–64.; 2. Singers K et al. Reprod Dom Anim 2015, 50, Suppl. 1, 48