



## RESEARCH ARTICLE

### The effect of stomach's different fullness levels on the topography of intestines in New Zealand rabbit (*Oryctolagus cuniculus L.*)

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### Yeni Zelanda tavşanında (*Oryctolagus cuniculus L.*) midenin farklı do-luluk derecelerinin bağırsakların topografisi üzerine etkisi

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#### Öz

**Amaç:** Yeni Zelanda tavşanlarında midenin farklı doluluk derecelerinin karın organlarının topografisi üzerine etkisi araştırıldı.

**Gereç ve Yöntem:** Tavşanlar; normal beslenenler, midesi boş ve midesi dolu olmak üzere 8'er adetlik 3 gruba ayrıldı. Doygunlukları farklı olan her üç gruptaki tavşanlardan 6 tanesi (3x2) diseke edildi. Bu üç grup hayvandan paramedian ve transversal kesitler alındı.

**Bulgular:** Çalışmada Yeni Zelanda tavşanında mide boşken duodenum'un başlangıcının arcus costales'in bitiş seviyesinde olduğu görüldü. Çalışmada cecum'un midesi boş tavşanlarda karın boşluğunun ventral'inde, midenin curvatura ventriculi major'u ile pelvis boşluğu girişi arasında, karın boşluğunun sağ tarafında, sağ karın duvarına temas eder durumda bulunduğu görüldü. Midesi dolu tavşanlarda ise cecum'un curvatura ventriculi major'un sağ kısmının altında, sağ karın duvarına dayalı olarak caudal yönde uzandığı belirlendi. Midesi boş tavşanlarda colon'un regio umbilicalis'te cecum'un kıvrımları arasında ampulla coli halinde başladığı, midesi dolu tavşanlarda ise colon'un karın boşluğunun sağ ve ventral kısmında, median düzlemin sol kısmına da geçmiş pozisyonda, karın boşluğunun ventral duvarına temas eder durumda yerleştiği görülmüştür.

**Öneri:** Tavşanların normal abdomen bölgesinin kesit anatomisinde mide doluluğunun barsaklar üzerine etkili olabileceği ifade edilebilir.

**Anahtar kelimeler:** Topografi, mide, tavşan, bağırsak

#### Abstract

**Aim:** The objective of the present study was examining the effect of stomach's different fullness levels on the topography of abdominal organs in rabbits.

**Materials and Methods:** Rabbits were divided into 3 groups, each of which consisting of 8 rabbits. 6 rabbits of those in each group with the same fullness level (3x2) were dissected. Paramedian and transversal sections were taken from this 3 groups.

**Results:** It was observed that when the stomach was empty, duodenum's beginning was on the ending level of arcus costales in New Zealand rabbits. When the stomach was full, it was pushed from pylorus towards the cranial. Cecum was observed to be in contact with right abdominal wall on the right side of the abdominal cavity as contacting uterus between stomach's curvatura ventriculi major and pelvis cavity entry in ventral abdominal cavity in rabbits with empty stomachs. In rabbits with full stomachs, cecum was determined to extend caudally contacting right abdominal wall and it was located under the right side of curvatura ventriculi major. Colon was found to start as ampulla coli between the folds of cecum in region umbilicalis in rabbits with empty stomachs; whereas, it was located as being contacted with the ventral wall of abdominal cavity in a position passing the left part of median level in right and ventral part of the abdominal cavity in rabbits with full stomachs.

**Conclusion:** It may be concluded that fullness of the stomach effects on intestines in the cross-sectional anatomy of the normal abdominal region in the rabbit.

**Key words:** Topography, Stomach, Rabbit, Intestines.



## Introduction

Rabbit is a species belonging to the family leporidae of the order lagomorpha (Barone et al 1973). New Zealand rabbit is an animal species who is often preferred by researchers due to its availability to be used in experimental studies. It appears as an animal model that is used in the research of certain diseases and surgical practices due to its anatomic and physiological characteristics (Craig 1969, Chiasson 1973, Breiling 1994).

In the last 10 years, the increase in the number of the interest shown in rabbits in Europe brings along developments on rabbit medicine. This leads medicine to new pursuits. One of them is cross-sectional anatomy. It is important to have a good command of cross-sectional anatomy for an effective diagnosis (Deniz 1966). In addition, cross-sectional anatomy is also atlas for computerized tomography, ultrasonography, and magnetic resonance imaging techniques. There are two types of intestines as small intestines and large intestines. While small intestines are shaped by duodenum, jejunum, and ileum, large intestines are shaped by cecum, colon, and rectum. The large part of duodenum is found in the upper right side of abdominal cavity (except for dogs) as being hanged with mesoduodenum. During its course, duodenum shapes ampulla duodeni, pars cranialis, flexura duodeni cranialis, pars descendens, flexura duodeni caudalis, pars transversa, pars ascendens flexura duodenojejunalis, and reaches its end after combining with jejunum (Fike et al 1980, Feeney et al 1991, Evans 1993, Evans and Delahunda 1996, Dursun 2002, DeRycke et al 2005, Dursun 2005). Jejunum is spiral shape of small intestines that are found in the ventrocaudal area of cavum abdominis (Evans and Delahunda 1996, Dursun 2005). Ruminants are found in the right half of the abdominal cavity and surround colons (Fike et al 1980, Feeney et al 1991, Evans 1993). Ileum is the shortest and last part of small intestines and opens to large intestines through valva ileocolica (Feeney et al 1991, Flecknell 1992, Evans 1993, Evans and Delahunda 1996, Dursun 2005). In rabbits, the last part of ileum has an open formation that has a round shape, is half-enlarged and is as called sacculus rotundus which is not found in other animals (Flecknell 1992, DeRycke et al 2005). Cecum is qualified as the first part of large intestines. It occupies a large area in rabbits and therefore creates a spiral shape. The narrower last part of cecum, which is composed of three sections, goes through the dorsal position and reaches backwards; this part with thick walls is called as processus vermiformis or appendix (Flecknell 1992, DeRycke et al 2005). Colon, which comprises the big part of large intestines in rabbits, leaves cecum in sacculus rotundus area which is largely distinguished with its marsupialized walls. The first part of colon is assumed as the cecum structure that constitutes ampulla cecalis coli (DeRycke 2005). Colon is found in the dorsal area of the abdominal cavity. Colon is divided into two 2 parts as colon ascendens and colon des-

cendens (Fox 1984) or into 3 parts as colon ascendens, colon transversum and colon descendens (Feeney et al 1991, Evans 1993, Evans and Delahunda 1996, Gezici and Eken 2001, Dursun 2002, DeRycke et al 2005, Dursun 2005).

In the literature review, no data concerning how or to what extend the intestine parts of New Zealand rabbit are affected by the stomach's fullness level has been found. Therefore, the purpose of this study was to determine the effect of stomach's fullness level on intestine parts of New Zealand rabbit by using dissection, paramedian and transversal sections.

## Materials and Methods

In this study, 24 healthy adult New Zealand rabbits including 12 males and 12 females were used. The rabbits were divided into three groups; those fed normally, those with empty stomachs and those with full stomachs. The rabbits in all three groups were put into cages and the rabbits in the first group were fed with normal meals, whereas no food was given to the rabbits in the second group for 24 hours. The rabbits in the third group were not given any food for 24 hours, and then they were given feed in the amounts that they can consume and in the period they were deprived of food they could drink only water. Later on, the rabbits were anaesthetised with 5 mg/kg xylazine HCl and 35 mg/kg ketamine HCl (Gezici 1999). Their blood was discharged before they came out of anaesthesia. Latex coloured with blue and red was injected into v. jugularis and a. carotis communis in order to ensure that the arteries and veins in the abdominal cavity are openly revealed. 6 (3x2) rabbits out of all three groups with the same stomach fullness levels were dissected. Remaining rabbits were frozen at -20°C in sternal position (Hillen 1984, Deniz 1966, Güzel and Yavru 1997). Paramedian sections were taken from totally 9 rabbits including three rabbits from these three groups and transversal sections were taken from the other 9 rabbits with the help of reciprocating saw (Bosch-Pfz 500e brand) in order not to damage tissues and organs too much. Although there are literature data concerning the transversal sectioning areas and section thickness (Klesty 1984, McLaughlin and Chiasson 1990, Deniz 1966, NAV 2005, König and Liebich 2007) in our study transversal sections were taken backwards starting from the last vertebra thoracica as separately from each vertebrae lumbales level. The interval between each vertebrae lumbales was measured to be approximately 2 cm. Later on, the rabbits, which were dissected and from which transversal and paramedian sections were taken, were photographed with a Nikon D80 brand camera. After cleaning the section surfaces, transversal sections were photographed from the cranial surfaces of received sections. Literature data (Popesco et al 1992, Deniz 1966, DeRycke et al 2005, Pearce et al 2007) were used in defining the anatomic structures observed in paramedian and transversal sections. While Mitutoyo Digimatic Caliper was





used to measure anatomic structures determined on rabbits, *Nomina Anatomica Veterinaria* (NAV 2005) was used for denominating them.

The use of rabbits in this study was approved by Süleyman Demirel University Animal Experiments Local Ethics Committee Department's decision dated 27.11.2008 and numbered 09/09.

## Results

### *A-Dissected animals*

#### *1<sup>st</sup> Group: Normally-fed rabbits*

Duodenum was observed to begin with pylorus, make a mild swelling called as ampulla duodeni, and shape flexura duodeni cranialis in a position contacting the side wall of the abdominal cavity in a position close to columna vertebralis right at the end of arcus costalis. Then, it was found to reach the cecum level with the name of pars descendens in a parallel position with right abdominal wall (Figures 1-c, 4-g, 5-g and 10-e). After this point, it makes a bend called as flexura duodeni caudalis, forms pars caudalis, and reaches the left side. This part was determined to be pars ascendens which has a course towards cranial and dorsal direction, and later on combines with jejunum. Jejunum was observed to form the folds called as ansa jejunalis, to be the empty intestine part and is mainly found in the left and bottom side of abdominal cavity (Figures 1-g, 4-d and 5-f). When abdomen's ventral wall was dissected, jejunum was found in the caudal of the stomach and observed to be in contact with cecum in a position close to median level. It was determined to be separate from ileum through plica ileocaecalis. Ileum is located in the right side of the abdominal cavity, shows a transversal course from the median level from a point close to right abdominal wall after jejunum where it begins and was observed to reach between cecum and colon ascendens (Figures 1-I, 4-h and 5-k). It was determined to end its course with ampulla ilei or with an expansion called sacculus rotundus. Cecum was observed to occupy a major part of abdominal cavity's regio umbilicalis area and regio abdominis lateralis dexter, and reach the right fossa paralumbalis (Figures 1-f, 4-e and 5-h). Presence of colon ascendens and ileum was observed between its folds. At the blind end of cecum, a worm-like formation called as appendix vermiformis which is found only in humans and rabbits was determined (Figure 11-h). Colon was observed to proceed with the name of colon ascendens in cranial direction in parallel with the long axis of the body in the right and dorsal part of the abdominal cavity (Figures 1-h, 4-I and 5-i). This part of the colon makes an expansion called as ampulla coli, makes a bend called as flexura coli dextra and goes from right side to left side with the name of colon transversum. Then, it makes a bend called as flexura coli sinistra, proceeds with the name of colon descendens

nearly along the median level in caudal direction and ends after forming rectum near the entry of cavum pelvis called as colon sigmoideum.

#### *2<sup>nd</sup> Group: Rabbits with empty stomach*

Duodenum which begins from pylorus was observed to make a mild swelling called as ampulla duodeni (Figure 2-e). Later on, immediately after the end of arcus costales, it shapes flexura duodeni cranialis in a position contacting the side wall of the abdominal cavity in a position close to columna vertebralis. Later on, it reaches the cecum level with the name of pars descendens in parallel level with right abdominal wall. After this point, it makes another bend called as flexura duodeni caudalis, forms pars caudalis, and reaches the left side. This section shows a course towards cranial and dorsal direction, and was found to be the pars ascendens which combines with jejunum. Jejunum was found to be in a position totally filling regio abdominalis sinistra in the ventral abdominal cavity (Figures 2-g, 6-g and 7-f). Corpus ventriculi part of the stomach was observed from the front side to be in contact with curvatura ventriculi major on a wide surface. The last part of jejunum shows a transversal course on regio umbilicus from regio abdominis lateralis sinister, goes towards regio abdominis lateralis dexter and forms ileum between cecum and the starting part of the colon ascendens on the right side of the median level. Although ileum had a thickness of 4.78 mm between cecum and colon ascendens in ventral examination, it shows a transversal course on the median level (Figures 6-k and 7-i). It ends its course with ampulla ilei or with an expansion called as sacculus rotundus. Cecum was found to be in the ventral abdominal cavity, in contact with uterus between stomach's curvatura ventriculi major and the entry of pelvis cavity and fill median line and the right side of the abdominal cavity as contacting the right abdominal wall (Figures 2-f, 6-h, 7-g and 12-h). Right after its beginning, cecum was found to follow a course on the median level towards caudal, contact the cornu uteri of the right uterus and make a bend to the right side. Later on, it goes on towards the craniodorsal direction in regio abdominis lateralis, makes a curve ventrally on 13<sup>th</sup> vertebra thoracica – 1<sup>st</sup> vertebra lumbalis level, continues towards the caudal direction until the 12<sup>th</sup> – 13<sup>th</sup> vertebrae thoracicae level, and forms the beginning of colon ascendens as ampulla ilei. Appendix vermiformis found on cecum extends from right side to the left on the last ventral part of jejunum, has an approximate length of 87.60 mm and an approximate width of 12.40 mm, and is located between left abdominal wall and jejunum. Colon was observed to start in regio umbilicalis between the folds of cecum as ampulla coli (Figures 2-h, 6-I, 7-h, 12-e, g and 13-e, j). It was found to go on towards craniomedial direction for a length of 31.24 mm from its starting point contacting the ventral wall of the abdominal cavity, go on at first towards the cranial, then the craniolateral direction, and reach the right abdominal wall. It was found to go on as co-



lon ascendens along this wall and form transverse colon on median level in the caudal of stomach's curvatura ventriculi major. Colon transversum was determined to go ahead the caudal passing on the right side of the median level on the caudal edge level of ren sinister after passing on the left side of median level. It was found to draw on the right side of cavum pelvis entry forming colon sigmoideum with a cavity facing the left side shaped like 'U' and reach rectum on median level with the name of colon descendens.

### 3<sup>rd</sup> Group: Rabbits with full stomach

Duodenum was found to go from pylorus towards the cranial on liver's visceral surface on regio hypocondriaca dextra. It went first towards the cranial, then towards the caudal starting from stomach's pylorus part (Figures 3-e, 8-f, 9-g and 14-f). It was found to verge with cecum and reach the pelvis cavity entry at the right side of the median level. In female animals, it went towards the median level right in front of the uterus and join jejunum. Jejunum was found to go towards stomach's caudal between colon descendens and colon ascendens along the median level by hanging with mesojejunum on the dorsal wall of the abdominal cavity after duodenum (Figures 3-g, 8-g, 9-f and 15-g). It was determined to fill regio abdominis lateralis sinister in the ventral abdominal cavity and reach towards cecum on stomach's curvatura ventriculi major's caudal and along the median level. Ileum was found to go on between cecum and colon ascendens (Figures 3-k, 8-k and 9-k), and reach an end after opening through ostium ileocecale reaching the cecum and colon border after the expansion called as ampulla ilei. Cecum was found to reach towards the caudal direction contacting the right abdominal wall after the caudal level of the area where pylorus is located under the right part of curvatura ventriculi major (Figures 3-k, 8-I, 9-h and 15-f). Pelvis cavity was observed to be in contact with jejunum rings and with corpus uteri and cornu uteri in female animals. Colon was observed to have a localization and a course similar to those that were fed normally. It was found to be located in right and ventral side of the abdominal cavity, in a position reaching also the left side of median level, as being in contact with the ventral wall of the abdominal cavity (Figure 14-g). Cranial edge was determined to cover the whole full stomach, and to be in contact with jejunum on the left side.

### Discussion

Knowing intestine topography is important for the diagnosis and treatment of a number of diseases. Güzel and Yavru (1997) indicated that it is important to know the topographical locations of organs to diagnose diseases by using imaging techniques. Researchers (Fike et al 1980, Hillen 1984, Feehey et al 1991, Breiling 1994) have emphasized that transversal cross-section images are on high demand especially in the practices of abdominal computerized tomography. In this

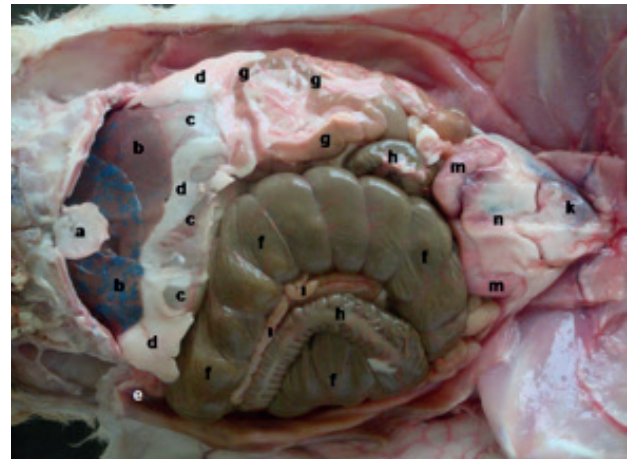


Figure 1. Ventral aspect of normally fed animals: a.Cartilago xiphoidea, b.Hepar, c.Ventriculus, d.Omentum majus, e.Pars descendens, f.Cecum, g.Jejunum, h.Colon ascendens, i.Ileum, k.Vesica urinaria, m.Cornu uteri, n.Corpus uteri.

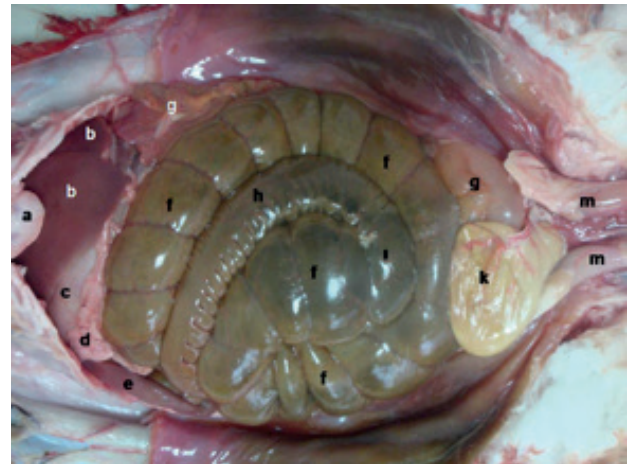


Figure 2. Ventral aspect of the animals with empty stomach: a.Cartilago xiphoidea, b.Hepar, c.Ventriculus, d.Omentum majus, e.Pars descendens, f.Cecum, g.Jejunum, h.Colon ascendens, i.Ampulla coli, k.Vesica urinaria, m.Testis.

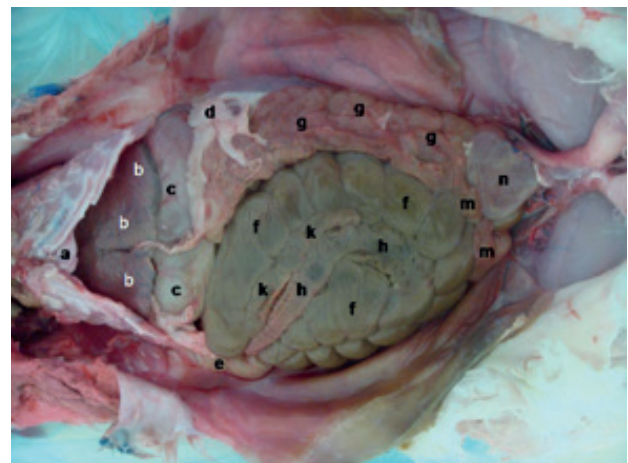


Figure 3. Ventral aspect of the rabbits with full stomach: a.Cartilago xiphoidea, b.Hepar, c.Ventriculus, d.Omentum majus, e.Pars descendens, f.Cecum, g.Jejunum, h.Colon ascendens, k.Ileum, m.Cornu uteri, n.Vesica urinaria.





Figure 4. Paramedian section of normally fed animals-right aspect: 1. Diaphragma, 2. Musculus quadratus lumborum, 3. Aorta abdominalis, a. Hepar, b. Fundus ventriculi, c. Corpus ventriculi, d. Jejunum, e. Cecum, f. Colon transversum, g. Pars ascendens, h. Ileum, i. Colon ascendens, j. Colon sigmoideum, k. Appendix vermiformis, m. Vesica urinaria, n. Colon descendens, o. Rectum.



Figure 7. Paramedian section of animals with empty stomach-left aspect: 1. Diaphragma, a. Cor, b. Pulmones, c. Hepar, d. Corpus ventriculi, e. Colon transversum, f. Jejunum, g. Cecum, h. Colon ascendens, i. Ileum, m. Vesica urinaria.



Figure 5. Paramedian section of normally fed animals-left aspect: 1. Diaphragma, 2. Medulla spinalis, 3. Aorta abdominalis, a. Cor, b. Pulmones, c. Hepar, d. Fundus ventriculi, e. Corpus ventriculi, f. Jejunum, g. Pars ascendens, h. Cecum, i. Colon ascendens, k. Ileum, m. Appendix vermiformis, n. Colon sigmoideum, o. Vesica urinaria, p. Colon descendens, r. Rectum.

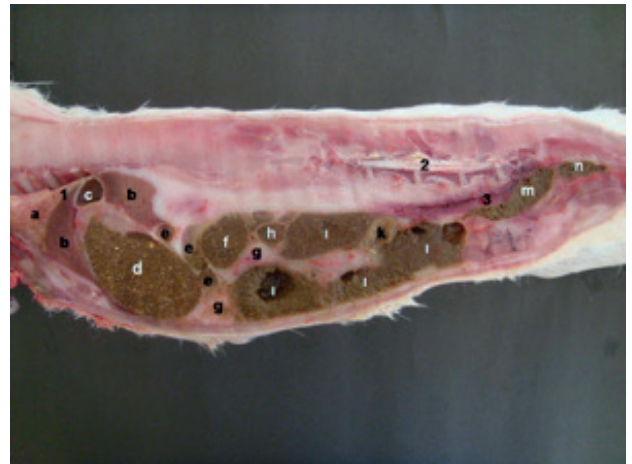


Figure 8. Paramedian section of animals with full stomach-right aspect: 1. Diaphragma, 2. Medulla spinalis, 3. Aorta abdominalis, a. Pulmones, b. Hepar, c. Fundus ventriculi, d. Corpus ventriculi, e. Colon transversum, f. Pars ascendens, g. Jejunum, h. Colon ascendens, i. Cecum, k. Ileum, m. Colon ascendens, n. Rectum.



Figure 6. Paramedian section of animals with empty stomach-right aspect: 1. Diaphragma, a. Cor, b. Pulmones, c. Hepar, d. Fundus ventriculi, e. Corpus ventriculi, f. Colon transversum, g. Jejunum, h. Cecum, i. Colon ascendens, k. Ileum, m. Vesica urinaria.

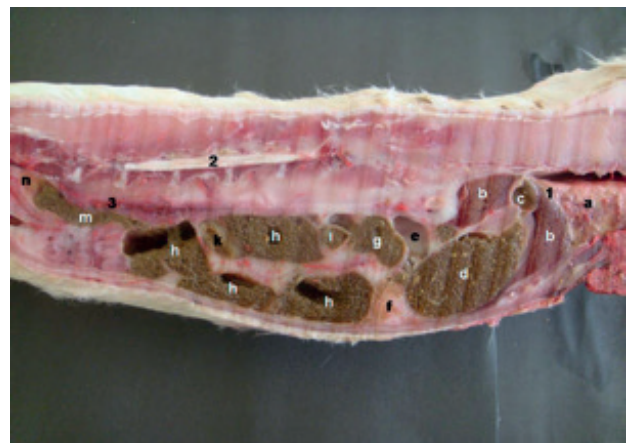


Figure 9. Paramedian section of animals with full stomach-left aspect: 1. Diaphragma, 2. Medulla spinalis, 3. Aorta abdominalis, a. Pulmones, b. Hepar, c. Fundus ventriculi, d. Corpus ventriculi, e. Colon transversum, f. Jejunum, g. Pars ascendens, h. Cecum, i. Colon ascendens, k. Ileum, m. Colon descendens, n. Rectum.

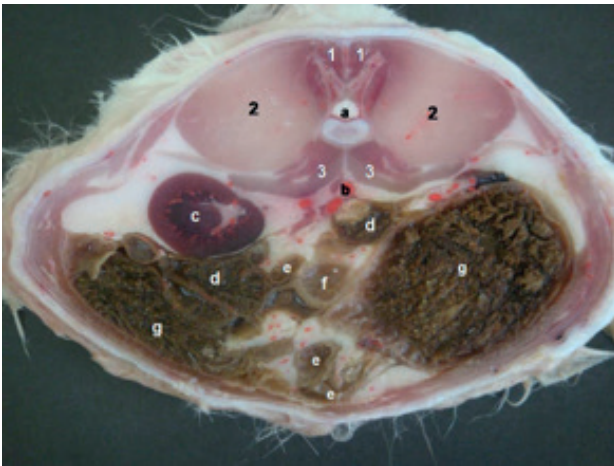


Figure 10. Transversal section of normally fed animals (Vertebra lumbalis I): 1.Mm. multifidi, 2.M.iliocostalis, 3.M. quadratus lumborum, a.Medulla spinalis, b.Aorta abdominalis, c.Ren dexter, d.Colon ascendens, e.Jejunum, f.Colon transversum, g.Cecum.

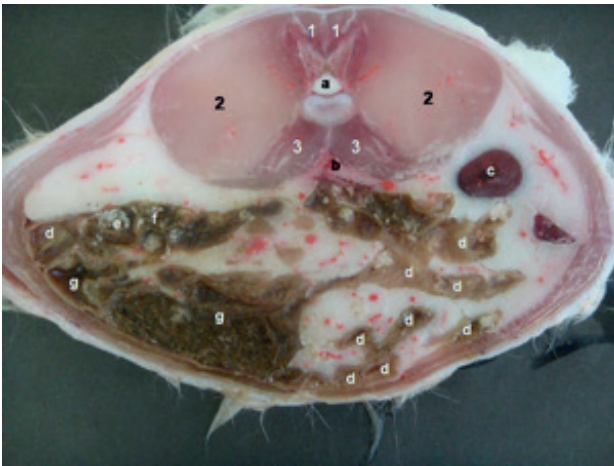


Figure 11. Transversal section of normally fed animals (Vertebra lumbalis II) 1. Mm. multifidi, 2.M.iliospinalis, 3.M.quadratus lumborum, a.Medulla spinalis, b.Aorta abdominalis, c.Ren sinister, d.Jejunum, e.Duodenum, f.Colon ascendens, g.Cecum

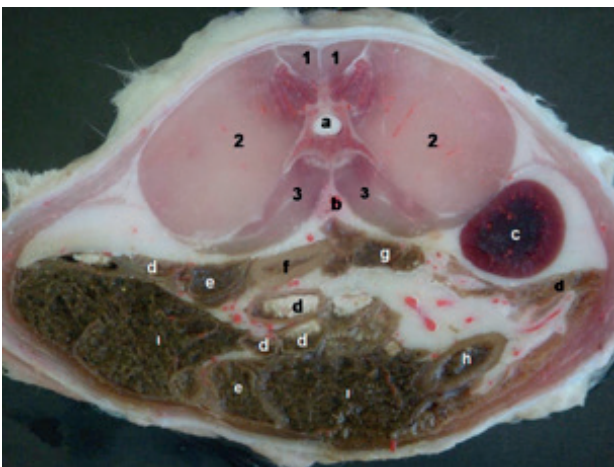


Figure 12. Transversal section of normally fed animals (Vertebra lumbalis III): 1.Mm.multifidi, 2.M.iliospinalis, 3.M.quadratus lumborum, a.Medulla spinalis, b.Aorta abdominalis, c.Ren sinister, d.Jejunum, e.Colon ascendens, f.Ileum, g.Colon descendens, h.Appendix vermiformis, i.Cecum

study, the effect of stomach's fullness level on the topography of intestine parts of New Zealand rabbit were determined by using transversal and paramedian sections.

Studies conducted on cats have stated that stomach's different fullness levels are affected by duodenum's location and shape (Deniz 1966, Klesty 1984). It has also been reported in studies that when the stomach is empty, duodenum starts on 8<sup>th</sup> (Van Caelenberg et al 2010) or 10<sup>th</sup> (Klesty 1984) intercostal spaces. When the stomach is full, duodenum's beginning has been reported to be on 9<sup>th</sup> (Gezici 1999), 10<sup>th</sup> (Deniz 1966) or 11<sup>th</sup> (Klesty 1984) intercostal spaces. In our study, it was observed that when the stomach was empty, duodenum's beginning was on the ending level of arcus costales in New Zealand rabbits. When the stomach was full, it was pushed from pylorus towards the cranial.

In a study conducted by Deniz (1966) on cats, increasing stomach volume was found to push jejunum towards caudal. In the same study, jejunum was reported to be on 4<sup>th</sup> vertebra lumbalis level when stomach was empty and on 6<sup>th</sup> level when stomach was full (Deniz 1966). Gezici (1999) emphasized that jejunum in cats was on 3<sup>rd</sup> - 4<sup>th</sup> vertebra lumbalis levels when stomach was empty and on 5<sup>th</sup> - 7<sup>th</sup> vertebra lumbalis levels when stomach was full. In this study, jejunum was observed to totally fill regio abdominalis sinistra in rabbits with empty stomachs. In rabbits with full stomachs, jejunum was pushed towards stomach's caudal between colon ascendens and colon descendens.

Deniz (1966) reported that topography of ileum was not affected by stomach's fullness level. Gezici (1999) reported that in rabbits with empty stomachs, ileum opened to cecum on 4<sup>th</sup> - 5<sup>th</sup> vertebra lumbalis levels; whereas, it opened to cecum on 6<sup>th</sup> vertebra lumbalis level in rabbits with full stomachs. In this study, it was found that topography of ileum was not affected by stomach different fullness levels in New Zealand rabbits.

In this study, cecum was observed to be in contact with right abdominal wall on the right side of the abdominal cavity as contacting uterus between stomach's curvatura ventriculi major and pelvis cavity entry in ventral abdominal cavity in rabbits with empty stomachs. In rabbits with full stomachs, cecum was determined to extend caudally contacting right abdominal wall from the caudal level of the area where pylorus was located under the right side of curvatura ventriculi major. In the literature review, no information has been found to determine if cecum topography is affected by stomach's fullness levels. In fact, this may be assessed within the study's limitations.

In their study, Gezici and Eken (2001) reported that the colon ascendens started on 5<sup>th</sup> vertebra lumbalis level in cats with empty stomachs whereas it started on 6<sup>th</sup> vertebra lumbalis level in cats with full stomachs.



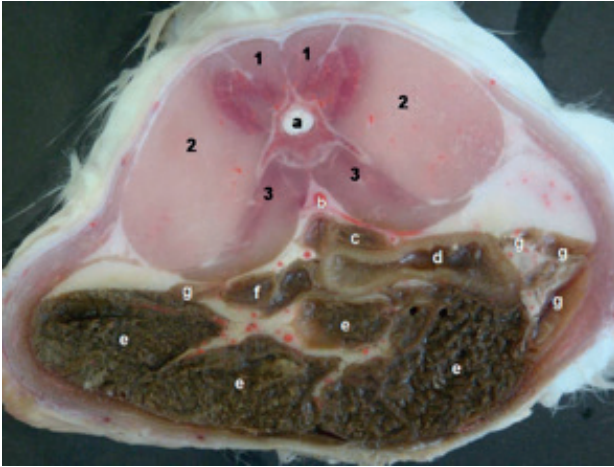


Figure 13. Transversal section of normally fed animals (Vertebra lumbalis IV): 1.Mm.multifidi, 2.M.iliospinalis, 3.M.quadratus lumborum, a.Medulla spinalis, b.Aorta abdominalis, c.Colon descendens, d.Ileum, e.Cecum, f.Colon ascendens, g.Jejunum.

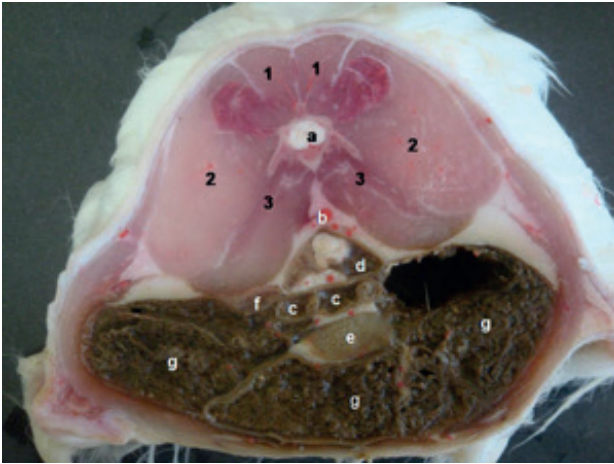


Figure 14. Transversal section of normally fed animals (Vertebra lumbalis V): 1.Mm. multifidi, 2.M.iliospinalis, 3.M.quadratus lumborum, a.Medulla spinalis, b.Aorta abdominalis, c.Jejunum, d.Colon descendens, e.Vesica urinaria, f.Uterus, g.Cecum.

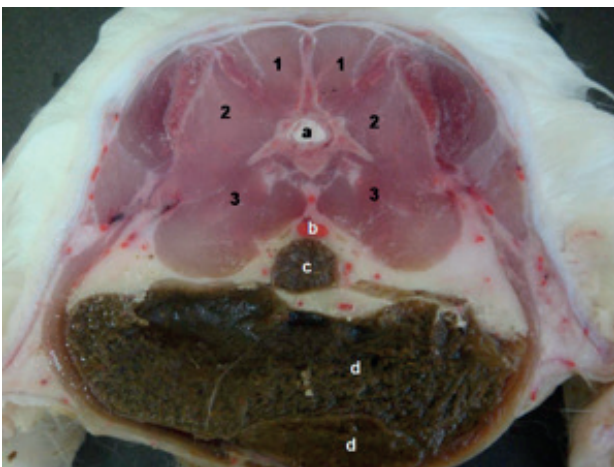


Figure 15. Transversal section of normally fed animals (Vertebra lumbalis VI): 1.Mm.multifidi, 2.M.iliospinalis, 3.M.quadratus lumborum, a.Medulla spinalis, b.Aorta abdominalis, c.Colon descendens, d.Cecum

lis level in cats with full stomachs. In the same study, colon descendens were reported to start on 6<sup>th</sup> vertebra lumbalis level in the left abdominal cavity in both groups. However, in this study, colon was found to start as ampulla coli between the folds of cecum in region umbilicalis in rabbits with empty stomachs; whereas, it was located as being contacted with the ventral wall of abdominal cavity in a position passing the left part of median level in right and ventral part of the abdominal cavity in rabbits with full stomachs.

### Conclusion

It was revealed in our study to what extent New Zealand rabbits' intestine sections are affected by stomach's fullness levels with the help of dissection and cross-sectional images. In the present study, the full and empty stomachs changed the topography of duodenum, jejunum or colon, however there were no changes in the topography of the ileum and cecum in rabbits. Results obtained from the study are thought to contribute to both rabbits' clinical anatomy and clinical practices especially in studies using imaging techniques.

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