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Effect of Pregnancy Upon the Emptying of the Gall Bladder.

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It has been definitely established that the feeding of certain foods, particularly egg yolk and cream will cause the gall bladder to empty; the emptying is due to a contraction of its intrinsic musculature. The mechanism involved in the contraction of the gall bladder has not been determined. It was felt, however, that should a chemical or a nervous mechanism be responsible, it could be determined by feeding pregnant animals egg yolk and cream, and observing the condition of the fetal gall bladder at a time when the maternal gall bladder was empty.

Accordingly, a group of pregnant dogs and guinea pigs were fed egg yolk and cream, the usual test-meal. After a period equivalent to that in which the gall bladder empties completely in the nonpregnant guinea pig and partially in the nonpregnant dog, the animals were etherized, the gall bladder explored under sterile technic and one or more of the fetuses removed. However, the gall bladder of the mother, explored at a time after feeding equivalent to that in which the nonpregnant animal's gall bladder is partially or completely emptied, showed little or no change in size. Observations were made on a large series of pregnant dogs and guinea pigs, but the gall bladder was not observed to empty following the ingestion of egg yolk and cream except in two dogs in which the gall bladders were examined 8 and 10 hours respectively after the taking of the fat meal, when slight but definite emptying was noted.

After we discovered that the gall bladder of the pregnant dog and the guinea pig did not empty as in the nonpregnant animal, we obtained a large number of spermophiles (common striped gopher) including males, nonpregnant females and females during various periods of pregnancy. It was found that the gall bladder of the male emptied approximately 4 hours following the ingestion of egg yolk and cream. The gall bladder of the nonpregnant female emptied similarly. The gall bladder of the pregnant female, on the other hand, was not seen to empty completely and partial emptying occurred in only a few instances; this occurred in early pregnancy only. The degree of emptying seemed to bear a direct relationship to the time of pregnancy.

The reason why the gall bladder of the pregnant animal does not empty following the ingestion of a meal of fat has not been definitely determined. However, it has been observed that the fat leaves the stomach much more slowly in the pregnant than in the nonpregnant animal, and that while the lacteals and the lymph nodes of the nonpregnant animal are usually perfectly white at the time the gall bladder is empty, the lacteals of the pregnant animal never appear to become well delineated or markedly distended. It would appear that the control mechanism of the gastro-intestinal tract is retarded in pregnancy, and thus the gall bladder either does not empty or is greatly delayed in emptying. Increase of the intra-abdominal pressure produced by the growing fetuses should be considered as a possible cause for the delay or the prevention of emptying the gall bladder following the ingestion of fat, yet this is not of great importance, as is shown by the fact that the gall bladder of a spermophile may not empty, or may empty only slightly, when the fetuses are no larger than the fecal material in the large intestine. In this connection it should be noted that in the two instances in which partial emptying of the gall bladder was noted in the dog, the gall bladders of the fetuses were also partially empty and dark-colored bile was found in the duodenum, as contrasted with the distended gall bladder and the duodenum free from bile, observed in the large number of fetuses removed from dogs whose gall bladders did not empty in the shorter period of time following the ingestion of egg yolk and cream. It is suggested that the failure of the gall bladder of the pregnant animal to empty following the ingestion of food may bear some relation to the high incidence of gall stones following pregnancy in the human being.

This is a preliminary report.

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Emptying of Gall Bladder and Mechanism of Common Bile Duct of Guinea Pig.

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The observations of Boyden[1] that a meal of fat is followed by partial or complete emptying of the gall bladder, proved definitely that the viscus emptied. The experiments of Boyden,[1] Whitaker,[2]