



Benefits of a Plant Based Diet on Prevention of Cholelithiasis

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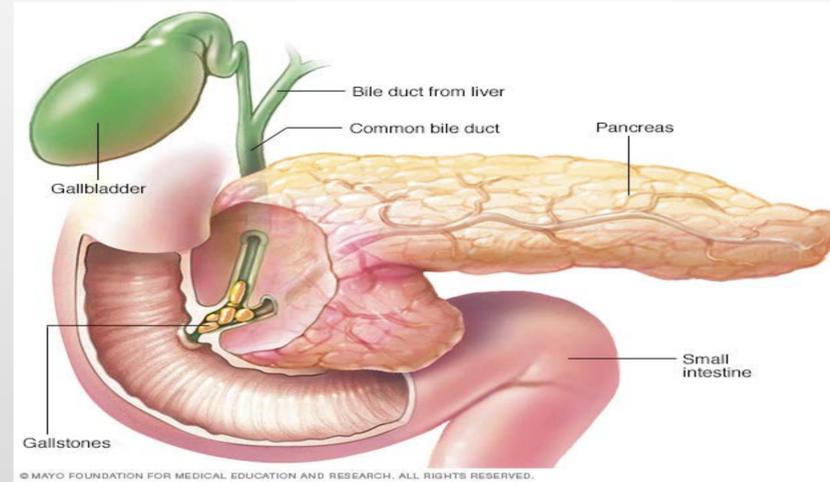
Abstract

Cholelithiasis, or the formation of gallstones, is a worldwide problem affecting an estimated 1 million Americans annually, with an estimated cost of approximately 6.5 billion dollars annually in the United States. It is noted to be much more prevalent in the Western and European countries. 90-95% of gallstones are composed of cholesterol.

Research indicates that the traditional “Western” diet that favors increased caloric intake, increased cholesterol, increased sugar, fatty acids, meat and carbohydrates is a more favorable predictor of gallstone disease while diets that are high in unsaturated fat, fiber, and fresh fruits and vegetables have been shown to reduce ones risk. More notably, a higher intake of fibers and polyphenols, or compounds commonly found in plants, has been linked to a rightful balance in the gut microbiota, which lessens the risk of gallstone formation. Diets high in fat cause increased secretion of bile, which has an antimicrobial affect on the normal microbiota of the bowel. Ultimately, increased consumption of fruits and vegetables in the diet lessens the likelihood of gallstone formation and supports the normal balance of gut microbiota.

Background

- ❖ Gallstone disease affects about 10-15% of adults in Western and European countries, approximately 1 million Americans annually.
- ❖ Nearly 90% of gallstones are found to be made of cholesterol (Qihan Wang, et al. 2017).
- ❖ Plant based diets have been linked with lower total cholesterol levels and lower low-density lipoprotein (LDL) levels (Chang, et al., 2019).
- ❖ What is the impact of a plant based diet on the occurrence of cholelithiasis?



Case Report

- ❖ 47 year old female
 - ✓ Past medical history DM2, HTN, obesity
 - ✓ Complaints of right upper quadrant and epigastric pain that radiates to the right back and shoulder.
 - ✓ Physical exam reveals the following pertinent positives: Tenderness to the right upper quadrant, + Murphy’s sign.
- ❖ Lab findings: Elevated alkaline phosphatase, total bilirubin, AST, ALT and WBC.
- ❖ Diagnostic results: US of abdomen + for gallstone disease, ERCP positive for gallstones at the bile duct.
- ❖ Diagnosis: Cholecystitis
- ❖ Treatment: Laparoscopic cholecystectomy
- ❖ Follow-up care will focus on better control of BP and lifestyle modifications including recommendation of the DASH diet and exercise of 150 minutes weekly.

Literature Review

- ❖ Gallstones are classified according to what they are composed of. Following cholecystectomy, nearly 90% of gallstones are typically found to be of the cholesterol type in the United States and European countries (Qihan Wang, et al. 2017).
- ❖ Cholesterol type gallstones are theorized to be linked to the “Westernized diet” which has increased levels of dietary fat, cholesterol, sugar, and caloric intake, with decreased amounts of whole grains and fiber (Kenney, 2018).
- ❖ Diets that are high in levels of fiber, ascorbic acid, unsaturated fat, vegetables, fruits, protein, nuts, whole grains, and calcium reduce the risk of gallstone occurrence (Bertola Compagnucci, et al., 2016).
- ❖ Gutiérrez-Díaz, et al. found that the intake of increased fibers and polyphenols (compounds commonly found in plants), was also found to have a positive impact on the gut microbiota, keeping it in good balance (2018).

Learning Points

- ❖ 90-95% of gallstones evaluated after a cholecystectomy are made of cholesterol.
- ❖ Diets exempt of, or with decreased intake of, meat and higher intake of fiber, fruits, and vegetables results in lower cholesterol levels and thus lower incidence of cholesterol type gallstones.
- ❖ Diets high in fruits and vegetables increase or decrease certain key gut microbiota leading to a healthier amount of flora and subsequently a decreased incidence of cholelithiasis.
- ❖ Diets high in fat cause increased secretion of bile, which has an antimicrobial affect on the normal microbiota of the bowel.
- ❖ Diets lower in fat result in less bile secretion and a better balance of gut microbiota.

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Available on following page.

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