

after the operation chosen for biopsy may be important. Regardless of the pathogenetic mechanism, most bone disease associated with reduction of the mineral content appears to end up as osteoporosis with bone fragility and fracture [1].

The authors have not been able to solve the question as to whether the post-gastrectomy bone changes are progressive or self-limiting. This may be due to the complicated interaction between the age of the patient at the time of surgery, the loss of mineral with age, and the loss due to gastric surgery. Also, the time of observation is comparatively short with too little variation. Therefore, the authors may not be entirely justified in drawing the conclusion that "none of the gastric operations that we evaluated seems to carry an appreciable risk of bone demineralization of clinical importance." The

decrease of bone mineral content in individuals with fractures related to bone fragility, as shown by several authors, is fairly moderate. An example is presented in the accompanying Figure. Therefore, as these patients grow older, the continuing loss of bone associated with aging, and an even small continuing loss due to the gastric procedure, will probably cause bone fragility and fractures without requiring any associated conditions to explain the high risk of fractures, which in the past has been demonstrated in these patients.

#### References

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### Transduodenal Diverticulectomy for Periapillary Diverticula, F. Iida (pp. 103-106)

#### Résumé

Une diverticulectomie transduodénale a été réalisée chez 14 malades avec diverticule pénétrant dans la tête du pancréas. Dans 13 cas, les diverticules étaient associés à une lithiase biliaire; un cas sans calcul biliaire avait des symptômes suggérant une cholélithiase. Les diverticulectomies n'ont entraîné aucune complication ni décès. Nous n'avons observé aucune récurrence de diverticule au cours des 3 années de follow-up. Chez un patient porteur de 3 diverticules, 1 d'entre eux n'a pas été vu à l'opération: ce malade reste asymptomatique. Il faut cependant, avant l'opération, repérer exactement le nombre de diverticules et leurs localisations.

#### Invited Commentary

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Duodenal diverticula were not considered to be clinically significant until demonstrated radiographically by Case in 1913 [1]. Subsequent to Cole's report in 1920, which emphasized the infrequency of symptoms or complications resulting from duodenal diverticula, most surgeons have been reluctant to advise elective excision of these lesions [2]. The surgical treatment has been limited primarily to the complications of duodenal divertic-

ula. This approach was supported by a reported operative mortality rate of 8-10% when surgical excision was in vogue. Operative intervention even for symptomatic diverticula without major complications was considered inappropriate. Whitcomb reinforced this viewpoint in reporting only one serious complication developing in 1,064 patients who were found to have duodenal diverticula [3]. Nevertheless, serious complications have been reported to occur more frequently, and some authors have considered periapillary diverticula to be a possible etiological factor in biliary lithiasis. In this paper, Iida et al. note that a causal relationship has not been established between gallstones and duodenal diverticula, but imply that when the two are present, the diverticulum should be excised.

The frequency of duodenal diverticula makes consideration of a rational approach to their management important. They are found in 1-5% of all patients having x-ray studies of the upper gastrointestinal tract. In reported series, 90% are solitary, and most arise from the medial or mesenteric border of the duodenum. More than  $\frac{2}{3}$  are found in the second portion of the duodenum and are periapillary in location. The stoma of the sac, which is composed of mucosa and submucosa, varies in diameter from several millimeters to 2-3 cm. Diverticula with small stomas are more commonly associated with symptoms because of the greater likelihood of gas, fluid, and food retention. Several patients have been reported with large diverticula having small stomas, in whom blind loop syn-

dromes with steatorrhea and vitamin B12 deficiency developed. They were relieved by excision of the diverticula. Although duodenal diverticula may occasionally be found in young patients, most are discovered in individuals who are 60 years of age or older. It is difficult to draw any conclusions about the associated occurrence of gallstones with duodenal diverticula, because of their high incidence in this age group. The important complications attributed to duodenal diverticula are caused by pressure on surrounding structures and inflammation or chronic stasis within the sac. Jaundice, cholangitis, biliary cirrhosis, acute and chronic pancreatitis and even duodenal obstruction may occur. Inflammatory changes may cause pain, hemorrhage, perforation, retroperitoneal abscesses, and other sequelae [4]. The frequency of complications, with few exceptions, is not well documented. Landor reported that 299 patients with duodenal diverticula were seen between 1956 and 1966 at the University of Missouri, 163 of which were periampullary [5]. He found that 32% of those arising near the ampulla had concomitant gallstones or previous cholecystectomies. Only 6 (3.6%) of his patients, all with symptoms of biliary tract disease, had diverticulectomies. Pinotti reviewed 491 patients with either biliary tract disease or pancreatitis seen between 1960 and 1970 in a São Paulo hospital [6]. Sixteen patients (3.2%) were found to have periampullary diverticula considered to be contributing to symptoms of right upper quadrant pain, jaundice, or pancreatitis. Information as to how many patients with asymptomatic diverticula were seen during the same time period was not furnished. Fifteen of Pinotti's patients with jaundice, biliary stones, and diverticula did well after a primary operation consisting of cholecystectomy, sphincteroplasty, and diverticulectomy. Of interest are 5 patients who were not relieved by cholecystectomy alone, but became asymptomatic after diverticulectomy combined with sphincteroplasty. Pinotti emphasized the need for sphincteroplasty because of periampullary inflammation associated with the diverticula. Both Landor and Pinotti considered diverticula to be an etiologic factor in patients with "post-cholecystectomy syndromes."

### The Value of Early Surgery and Routine Operative Cholangiography in the Management of Acute Cholecystitis, R. Reiss, S. Pikelnie, M. Engelberg (pp. 107-110)

#### Résumé

La cholécystite aiguë reste l'une des urgences abdominales les plus fréquentes. Pourtant, de nombreux aspects de sa thérapeutique sont encore con-

The technique of periampullary diverticulectomy as described by Iida et al. for noninflamed intrapancreatic diverticula is effective, and its safety is affirmed by his excellent results. I have personally performed this procedure in 2 patients who had intermittent jaundice many years after cholecystectomies. These patients had neither common bile duct stones nor sphincter stenosis. Transduodenal excision of the diverticula has resulted in complete relief of symptoms.

The controversial aspect of the paper of Iida et al. is not related to their technique, but the implication that this procedure is indicated in most patients with concomitant gallstones and periampullary diverticula. Most surgeons in the United States would be reluctant to accept a liberalized indication for diverticulectomy because of the apparent rarity of complications when diverticula are left alone. On the other hand, most experienced biliary tract surgeons have encountered an occasional post-cholecystectomy patient whose persistent symptoms could be attributed to a diverticulum. Perhaps this paper will stimulate a reassessment of the role of diverticula as a cause of symptoms, particularly in the patient with a "post-cholecystectomy syndrome." To the uninitiated, however, it should not be considered a license to electively excise all periampullary diverticula associated with gallstones.

#### References

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trovésés. Dans une étude prospective de 182 opérations consécutives pour cholécystite aiguë, nous avons tenté de déterminer dans quelle mesure l'opération précoce et la cholangiographie per-opératoire de routine améliorent les résultats immédiats et à long terme.