Intestinal tissues of swine with and without lesions of proliferative enteritis (PE) were cultured for the presence of Campylobacter spp. Swine small intestines (ileum) of 46 pigs were frozen (-70°C) then thawed, opened and gently washed with tryptic soy broth. The mucosal surfaces were scraped and 1 g of epithelial surface scrapings were ground until emulsified. The emulsion was passed through 0.85% and 0.6% membrane filters. Original emulsion, 0.45 µm filtrate and 0.65 µm filtrate were inoculated onto Mueller-Hinton agar (M1) with 5% sheep blood and with or without 2.5 µg/ml cephalothin and 6.5 µg/ml sulfonamide. Plates were incubated at 37°C in 5%, 7% CO₂, 7% N₂, and 90% O₂. Plates were examined at 48 hour intervals for 144 hours. Organisms were characterized using the following tests: fermentation or oxidation of deoxyribose, galactose, lactose, sucrose, and glucose; presence of flagellae; catalase; H₂S production using Thioglycollate broth; nitrite and nitrate reduction; growth in 3.5%, 7.2%, 10%, and 15% NaCl; growth in 1.0X, 1.5X, 2.0X, 2.5X, and 3.0X glucose; and growth in 0.4% and 0.8% sodium chloride. Sensitivity to 30µg nalidixic acid and 30µg cephalothin was determined.

Organisms were considered Campylobacter spp. if they were gram-negative, microaerophilic curved rods, 0.5µm to 0.8µm wide and 2.0µm to 3.5µm in length, showed darting motility, did not utilize deoxyribose by oxidation or fermentation, did not hydrolyze gelatin or urea, were oxidase-positive and possessed a single polar flagellum.

Four species of Campylobacter were found. A previously undescribed organism C. hyointestinalis (CHI) was found in 19 specimens of swine with PE. Colonies were yellow, circular, convex, slightly mucoid, about 1-2 mm in diameter and did not swell. Organisms were long, loosely-coiled, 0.35 to 0.55 µm wide, with some hooked forms. CHI revealed a single polar flagellum.

C. jejuni as Porosilis (CBH) was isolated from 18 specimens. Colonies were 0.5 mm yellow, circular, convex and slightly hemolytic. When picked from agar, they tended to come off in clumps. The organism was short, spiral-shaped about 0.25 to 0.45 µm wide with a single polar flagellum.

From 10 specimens, C. jejuni or C. coli were found. CHI and CBH together were found in pigs with PE. CHI alone was found seven pigs with PE and in one pig without PE. CBH was found in five pigs with PE and in two without PE. C. jejuni/coli (CJ/C) were found in two pigs with PE, and eight pigs without PE. Campylobacter were found in two pigs with PE and ten pigs without PE.

Important differential characteristics of CHI include: catalase-positive, H₂S-negative on TSU, no growth on 0.4% thiophenol-urate, resistant to nalidixic acid and resistant to cephalothin. CBH was catalase-negative, H₂S-positive on TSU, did not grow on 0.4% thiophenol-urate, resistant to nalidixic acid and resistant to cephalothin. CJ/C was catalase-positive, H₂S-negative on TSU, grew on 0.4% thiophenol-urate, was sensitive to nalidixic acid and resistant to cephalothin.

Conclusions: CHI is the most common Campylobacter found in pigs with PE. Its importance as a possible cause of PE should be considered.