Ileal Pouch-Anal Anastomosis Patients Over 50 Years of Age Require Screening for Osteoporosis: Evidence From Clinical Practice

**Background:** Risk factors for osteoporosis include ulcerative colitis (UC) and increasing age. The current American Gastroenterology Association (AGA) guidelines recommend screening of postmenopausal women and men over 50 years with ulcerative colitis for osteoporosis. The prevalence of osteoporosis in ileal pouch-anal anastomosis (IPAA) patients over the age of 50 years is not known.

**Method:** A bone density scan (DXA) was performed in fifty three consecutive UC IPAA patients over the age of 50. Sex, smoking status, age at diagnosis of UC, duration of UC, age at IPAA, years since IPAA, age at DXA and pouch histological inflammatory score were recorded. The data were analysed using the Kruskal-Wallis test and Spearman’s correlation coefficient.

**Results:** 53 patients were identified, the median age was 58 years and the median age at IPAA was 45. The prevalence of osteopenia and osteoporosis was 43.4% and 13.2% respectively.

Age at IPAA was negatively correlated with bone density ($P = 0.041, r = 0.281$) and a negative correlation approaching significance with age at the time of DXA ($P = 0.071, r = -0.250$). No other factor studied correlated with bone density.

**Conclusion:** The prevalence of osteoporosis and osteopenia found in this study is similar to that reported for UC patients who have not undergone IPAA. Patients having IPAA should be screened in line with current UC guidelines, targeting those over 50 years.

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BACKGROUND

Restorative proctocolectomy with ileal pouch-anal surgery (IPAA) is accepted as the operation of choice for patients with ulcerative colitis (UC) who require surgery (1). Studies of the long-term outcome of these patients have reported that the vast majority of patients (90%) will have a functioning IPAA 20 years after surgery (2,3). IPAA is frequently carried out in in older patients (4). Given this ageing population, clinical guidelines for long-term follow-up are becoming more important both in primary and secondary care.

In addition to age inflammatory bowel disease (IBD) and the use of corticosteroids are important risk factors for osteoporosis but it is difficult to differentiate between them (5). In IBD the overall prevalence of osteoporosis is 15% and the relative fracture risk is 40% greater than in the general population and increases with age (6). Routine DXA screening in older patient groups is only recommended in high-risk groups, such as those with IBD (7). The American National Osteoporosis Foundation (NOF) recommends treatment of postmenopausal women and men 50 years or over with osteoporosis based upon bone mineral density (BMD) measurement using dual-energy X-ray absorptiometry (DXA) (8).

The recent guidelines of the American Gastroenterology Association (AGA) recommend that post-menopausal females and males over 50 years of age, with IBD are investigated with a DXA scan to exclude osteoporosis. In addition these guidelines suggest that IPAA may be associated with an improvement in BMD (9). The rationale for screening stems from the knowledge that the risk of sustaining a fracture doubles with each standard deviation decrease in BMD(8), therefore identifying patients with osteopenia or osteoporosis allows dietary or drug management to be initiated in order to reduce the risk of fracture. Two studies have reported the prevalence of osteoporosis and osteopenia in patients after IPAA. In these studies a prevalence of up to 32% of osteoporosis was reported (11,12). In addition two studies have reported an increase in BMD following IPAA (13,14). All these studies were limited by including patients of all ages with very few patients over the age of 50. Therefore it is unclear whether the AGA guidelines which recommend DXA screening only in post-menopausal females and males over 50 years of age should be applied to IPAA patients.

We hypothesised that the prevalence of osteoporosis in IPAA patients over 50 would be sufficiently high to warrant screening since patients who required surgery would be more likely to have had more active UC and more likely to have been treated with corticosteroid medication than non-surgical UC patients. Furthermore age would be an additional risk factor.

AIMS

The study aimed to establish the prevalence of osteoporosis and osteopenia in IPAA patients over 50 years of age, to assess whether DXA scanning should be routinely performed in this group.

METHOD

All patients having IPAA at our Institution are routinely reviewed annually. A clinical history including details of function is taken and a pouchoscopy and blood investigations are obtained. Over the period of one year patients attending for follow up of more than 50 years of age underwent in addition a DXA bone scan unless this had been performed in the preceding three years.

Ethical permission to collect prospective and retrospective data in IPAA patients was granted by the Brent and Harrow Research Ethics Committee. Exclusion criteria for the study included patients taking hormone replacement therapy, or other drugs known to influence BMD. The patients’ age was defined as age at the time of the DXA scan; the duration of UC was defined as the number of years between the diagnosis of UC and IPAA. The interval since IPAA was defined as the number of years between IPAA and the DXA scan. Patients were asked about cigarette smoking and menopausal status. The histological grade of pouch inflammation was defined as the mean Moskowitz score (15) reported from biopsies taken at the most recent pouchoscopy. Corrected calcium levels were identified from the most recent blood test results.

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Bone Mineral Density Measurement

DXA was used to measure BMD at the lumbar spine and the hip or femoral neck. Osteopenia was defined as a T score less than −1.0 and greater than or equal to −2.5. Osteoporosis was defined as a T score less than −2.5 (16).

Data Analysis

BMD results were correlated with factors considered potentially to influence the risk of reduced bone density. The Kruskal-Wallis test was used to analyse the differences between groups and Spearman’s correlation test was used to estimate the level of association between bone density and potential risk factors. A two-tailed P-value less than 0.05 was considered significant.

RESULTS

Thirty-two males and eleven female patients were studied. All females were post-menopausal. Three patients had undergone IPAA for dysplasia. In the remainder the indication for surgery was UC refractory to medical therapy. Thirteen patients were current or ex-smokers. The clinical and demographic details of the patients are shown in Tables 1 and 2. The differences in the pouch mucosal histological inflammatory score and serum calcium values are given in Table 3. The T-scores for the normal, osteopenic and osteoporotic groups are shown in Table 4. The patient characteristics in each of the three groups were not significantly different (see Tables 1–4).

Seven (13.2%) patients had osteoporosis and 23 (43.4%) patients had osteopenia at either the hip or spine or at both sites. 23 (43.4%) patients had normal bone density. The median T-score and median BMD as well as the range for each group at each site measured are shown in Table 4.
variables studied were not significantly correlated with bone density. See Figures 1–7.

**Bone Density**

Tables 1–4 and Figures 1–7 reproduced from: McLaughlin SD, Perry-Woodford ZL, Clark SK et al. Osteoporosis in patients over 50 years of age following restorative proctocolectomy for ulcerative colitis: Is DXA screening warranted? *Inflamm Bowel Dis* 2010

**DISCUSSION**

The current AGA guidelines recommend screening for BMD in all IBD patients over 50 years (6) but there are no studies reporting the incidence or prevalence of osteoporosis in this age group after IPAA. In the present study we excluded patients younger than 50 years and found that the prevalence of osteoporosis and osteopenia after IPAA were similar to those reported for UC patients in the same age group. We also found a significant negative correlation with age at IPAA and a negative correlation approaching significance with age at the time of DXA. Importantly duration of UC, number of years since IPAA, age at diagnosis of UC, histological score and sex were not associated with BMD.

These results suggest that the yield of DXA screening will be higher in the older IPAA population and clinicians should target screening at this group.

The prevalence of osteoporosis and osteopenia of 13% and 43% found in the present study is similar to that reported in studies of UC patients who have not undergone surgery, in which rates of osteoporosis and osteopenia have ranged from 4 to 50% and 32 to 67% respectively (17–22). The prevalence is however significantly higher than that reported by in study of IPAA patients of all ages(11), suggesting that osteopenia and osteoporosis are more common in older IPAA patients but that overall osteopenia and osteoporosis
Figure 1.

Figure 2.

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Ileal Pouch-anal Anastomosis Patients

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**Figure 3.**

**Figure 4.**
Ileal Pouch-anal Anastomosis Patients

Figure 5.

Age at RPC

Figure 6.

Duration of RPC
are not more common than in the global UC population. In common with the present study a study from the Cleveland clinic found older age to be associated with an increased risk of osteoporosis. However this study reported a prevalence of osteoporosis of 32.1% (12). This is significantly higher than the present study despite patients of all ages being recruited and is probably because patients were recruited from a specialist pouchitis clinic and consequently the majority suffered from pouch inflammatory disorders. In the present study we recruited all IPAA patients over 50 years of age attending our clinic, thus the majority did not have pouchitis; which we believe is more likely to represent usual clinic practice.

The current AGA guidelines recommend that clinicians adopt DXA screening in all IBD patients over 50 years. Specific advice regarding IPAA patients is not given but the guidelines state that IPAA may be protective. Our results suggest that the screening of IBD patients over 50 years should include IPAA patients. In line with these guidelines we recommend that clinicians screen IPAA patients over 50 years of age and particularly those who have undergone IPAA at 45 years of age or older. Since our results suggest these patients may also be at increased risk of reduced BMD.

Given the high prevalence of osteopenia in the population studied, clinicians should ensure that IPAA patients over the age of 50 maintain an adequate calcium and vitamin D intake or consider supplementation when this is not practicable.

References


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