

Table. Performances of the Tested Scores

Risk Score	AROC (95% CI)	κ (95% CI)	Sensitivity, % (95% CI)	Specificity, % (95% CI)	PPV (95% CI)	NPV (95% CI)
Balkau et al, ⁴ C	76.3 (73.1-79.5)	0.095 (0.038-0.152)	10.1 (6.0-15.6)	97.4 (96.8-98.0)	18.5 (11.1-27.9)	94.9 (94.0-95.6)
Kahn et al, ³ C	79.2 (76.0-82.3)	0.209 (0.152-0.266)	32.5 (25.5-40.2)	93.2 (92.2-94.1)	21.8 (16.9-27.4)	95.9 (95.1-96.6)
Griffin et al, ⁵ C	79.9 (76.9-82.9)	0.199 (0.154-0.243)	50.9 (43.1-58.6)	86.3 (85.0-87.5)	17.8 (14.5-21.6)	96.8 (96.0-97.4)
Wilson et al, ⁹ CB	83.0 (79.9-86.1)	0.123 (0.059-0.186)	8.9 (5.1-14.2)	99.1 (98.6-99.4)	35.7 (21.6-52.0)	94.9 (94.1-95.7)
Swiss Diabetes Association, ⁷ C	84.7 (82.2-87.2)	0.253 (0.201-0.305)	49.7 (41.9-57.5)	90.0 (88.9-91.1)	22.5 (18.4-27.1)	96.8 (96.1-97.5)
FINDRISC, ⁶ C	85.1 (82.7-87.6)	0.251 (0.207-0.294)	65.7 (58.0-72.8)	85.2 (83.8-86.5)	20.6 (17.3-24.3)	97.7 (97.0-98.2)
Kahn et al, ³ CB	89.9 (87.9-91.9)	0.339 (0.278-0.399)	49.1 (41.4-56.9)	93.7 (92.8-94.6)	31.4 (25.9-37.4)	96.9 (96.2-97.5)

Abbreviations: AROC, area under the receiver operating characteristic curve; C, clinical; CB, clinical + biologic; FINDRISC, Finnish Type 2 Diabetes Risk Score; NPV, negative predictive value; PPV, positive predictive value.

ing that the reduction in its predictive power may not be significant. In this study, physical activity was defined as at least 2 h/wk of leisure-time physical activity, but it was defined as 4 h/wk or 30-min/d in the original publications.^{6,7} Finally, this study was limited to white participants and whether the results also apply to other ethnicities is unknown.

In conclusion, this is the first study, to our knowledge, to compare the prognostic validity of several risk scores for T2DM. The Kahn clinical + biologic risk score has the highest AROC, but the clinical FINDRISC score may be more practical and less expensive for screening. Further research is needed to assess the real impact of these scores in preventing T2DM.

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ONLINE FIRST

Frequent Fracture of TrapEase Inferior Vena Cava Filters: A Long-term Follow-up Assessment

Pulmonary thromboembolism (PTE) is one of the most significant complications of deep vein thrombosis (DVT) of the lower extremities. To prevent PTE, an inferior vena cava filter (IVCF) is often used.¹ The TrapEase IVCF (Cordis Endovascular, Johnson & Johnson) is one of the most popular permanent IVCFs

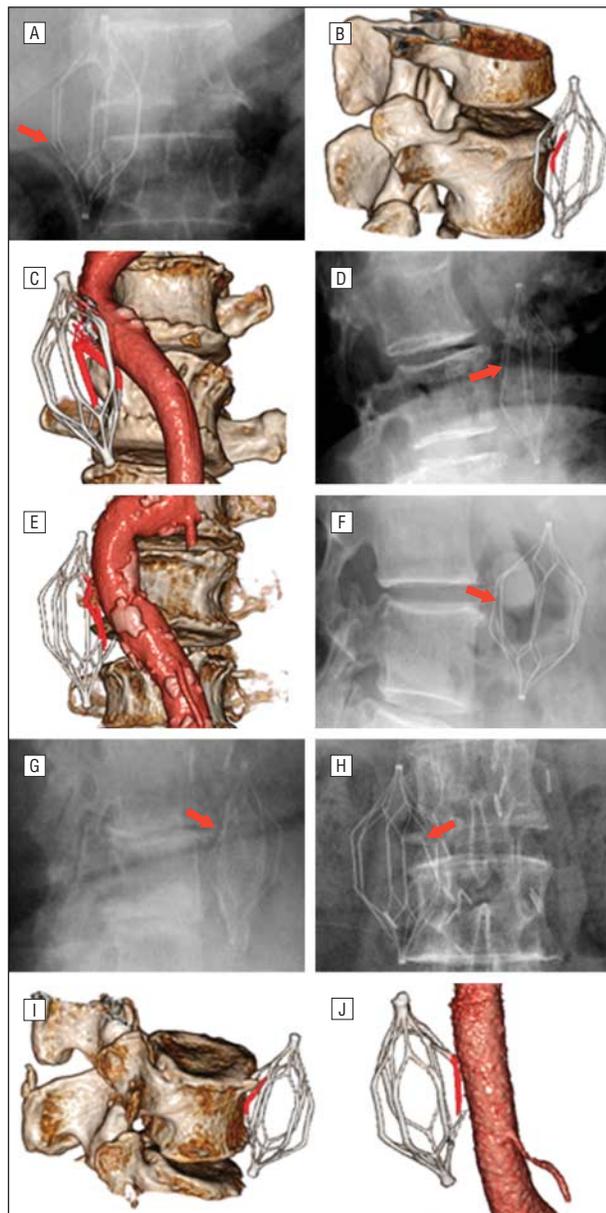


Figure. Radiographic examinations and 3-dimensional images of filter fracture cases. A, Case 6; B, case 7; C, case 8; D, case 9; E, case 10; F, case 15; G, case 16; H, case 18; I, case 19; and J, case 20 (eTable; <http://www.archinternmed.com>). Arrows show the fractured struts. In cases A, B, D, F, G, H, and I, a single strut was fractured because of the compression of the vertebral body. In case J, a single strut was fractured because of the compression of the tortuous aorta. In cases C and E, 2 struts were fractured because of the compression of the body and tortuous aorta.

today. Previous studies have reported that the TrapEase IVCF is safe, effective, and resistant to fracture.^{2,3} However, these studies were performed over a short-term follow-up period, and their evaluation methods seemed to be insufficient to adequately assess IVCF fractures. In the present study, we created 3-dimensional (3-D) images from computed tomographic (CT) images to accurately evaluate the presence of TrapEase IVCF fractures after long-term follow-up.

Methods. Between November 2002 and July 2006, 20 TrapEase IVCFs were inserted in 20 patients (7 men and

13 women; mean age, 64 years; range, 39-84 years) (eTable; <http://www.archinternmed.com>). Six other patients, who had undergone TrapEase IVCF insertion in this period but died from malignant disease within 6 months, were not included. Of the 20 patients, 14 were diagnosed as having PTE by CT or lung perfusion scintigraphy before the placement of the filter. In all cases, filter insertion was performed uneventfully. The follow-up study was performed retrospectively at our outpatient clinic after the placement of the filter. Radiographic examination in 2 projections (anteroposterior view and lateral view) and an abdominal CT were performed on each patient to assess IVCF fractures. For more detailed assessment of the fracture site, 3-D images were created by the Volume Analyzer SYNAPSE VINCENT 3D image analysis system (Fujifilm Medical). The mean follow-up time was 60 months (range, 9-94 months).

Results. The devices were evaluated at an average of 50.0 months after implantation. Among the 20 patients (20 TrapEase IVCFs), 10 TrapEase IVCFs (50%) were fractured. Remarkably, 9 of the 14 filters (64%) that had been inserted for longer than 4 years revealed fractures. Straight struts were fractured in all cases. Among the 10 fractured IVCFs, 8 had a single fractured strut, while 2 had multiple fractured struts (**Figure**, C and E). Radiographic and 3-D CT images revealed the geometrical relationships between the fracture sites and the neighboring structures. Among the fractured filters, the straight struts of the TrapEase IVCF seemed to be fractured by the compression of the vertebral bodies, particularly the vertebral osteophytes (9 cases) and the compression of the tortuous aorta (3 cases) (**Figure**). Thrombus inside the filter was detected in 2 cases. None of the patients presented filter-related life-threatening adverse events such as cardiac tamponade or retroperitoneal hematoma. All patients continued follow-up examination at our outpatient clinic. In the 10 cases with no filter fracture, neither the vertebral bodies nor the aorta compressed the filters.

Comment. The use of IVCFs for the prevention of fatal PTE has been increasing in recent times. In this study, we showed that patients undergoing permanent TrapEase IVCF insertion are at extremely high risk of strut fractures as early as 2 to 3 years after IVCF placement. Although no filter-related life-threatening events were registered in our study, several reports have previously warned of potentially fatal complications, such as cardiac tamponade or ventricular tachycardia, caused by rupture of the struts.^{4,5} Therefore, the permanent IVCFs should be used with caution and followed closely. Moreover, the indication of retrievable IVCFs such as the OptEase IVCF (Cordis Endovascular), which has a structure similar to that of TrapEase IVCF, as prophylaxis in trauma patients at high risk of PTE has been dramatically increasing.⁶ However, the rate of the filter removal has remained as low as around 20%.⁷ The remaining cases of retrievable IVCF placement are considered permanent IVCF placements owing to technical difficulties during retrieval or loss to follow-up. The outcomes of retrievable IVCF placement should be studied and removal

should be encouraged.

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Fecal Transplant via Retention Enema for Refractory or Recurrent *Clostridium difficile* Infection

Clostridium difficile infection (CDI) is the leading cause of nosocomial infection and its rates continue to rise. In the United States, the incidence of CDI tripled between

1996 and 2005 (31 per 100 000 vs 84 per 100 000).¹ This has been accompanied by an increase in disease severity, with mortality rates of up to 6.9%.² In addition, nosocomial CDI increases the cost of otherwise matched hospitalizations by 4-fold.³

Metronidazole therapy failure rates for uncomplicated CDI have risen from 2.5% to higher than 18% since 2000.¹ Recurrence rates are as high as 50% in patients older than 65 years and exceed 60% after 2 or more recurrences.^{1,4} Accordingly, fecal transplant (FT) serves as an alternative approach. While antibiotics can further disrupt the microbiome, FT aims to reconstitute healthy flora. In uncontrolled case series, clinical resolution rates following FT are 73% to 100% in recurrent or refractory CDI.⁵⁻⁷ Most reports have evaluated FT via nasogastric tube and colonoscopy, which are cumbersome and costly.^{6,7} This report describes FT via retention enema in patients with refractory or recurrent CDI.

Methods. Patients. Case records were reviewed for 27 patients who underwent FT via retention enema. Inclusion criteria were (1) laboratory-confirmed *C difficile* toxin using enzyme immunoassay with no other cause for diarrhea; (2) refractory CDI (defined as ongoing diarrhea despite antimicrobial treatment) or recurrent CDI (defined as symptom resolution for at least 2 days after discontinuation of treatment with recurrence of diarrhea); and (3) complete clinical and laboratory documentation by medical chart or telephone review.

FT Donor Screening. Two healthy volunteers served as donors and were evaluated for transmissible pathogens. Blood was screened for hepatitis B surface antigen, hepatitis C antibody, *Helicobacter pylori* and syphilis serologic markers, human immunodeficiency virus types 1 and 2, and human T-lymphotropic virus types I and II. Stool was processed for enteric bacterial pathogens, *C difficile* toxin, and ova and parasites. The donors took no antibiotics for 6 months prior to stool donation.

FT Protocol. All CDI therapy was discontinued at least 24 hours prior to FT. Approximately 150 g of fresh stool collected was emulsified in 300 mL of sterile water. The supernatant component was administered rectally by enema. If diarrhea recurred within 7 days, the procedure was repeated.

Results. The mean age was 69.4 years (range, 26-87 years) with 14 male subjects (52%) and 22 in-patients (81%). Subjects had a mean duration of diarrhea of 152.6 days. Fever and abdominal pain were documented in 29.6% and 74.1%, respectively.

Prior CDI therapies and clinical outcomes following FT are outlined in the **Table**. The mean cumulative antibiotic exposure before FT included 24.9 days of metronidazole therapy; 54.6 days of vancomycin monotherapy; 13.6 days of vancomycin taper; and 9.9 days of combined therapy with metronidazole and vancomycin.

After FT, 25 of 27 (93%) experienced clinical resolution. Of these, 22 resolved within 24 hours of transplant. Five patients underwent a second FT because of ongoing diarrhea; 3 had symptom resolution and 2 continued to experience diarrhea despite 2 FTs. There were no relapses or adverse events in the cohort that success-