To the Editor: Desmoid tumors (DTs) show local aggressiveness to surrounding structures and exhibit a propensity to recur, leading to a high local recurrence rate and significant functional impairments and morbidity.[1] It has been shown that DTs located in the abdominal wall and abdominal cavity are relatively minimally invasive and have a relatively low recurrence rate,[2] which indicated abdominal desmoid tumors (ADTs) may have different biological make-ups and genes. This study was aimed to delineate the clinicopathological features and determine the prognostic factors for recurrence-free survival (RFS) in ADTs after macroscopic complete surgical resection.

From January 2000 to January 2019, a total of 343 patients who underwent surgical resection and were pathologically diagnosed with DTs from two different Chinese institutions were retrospectively reviewed. The inclusion criteria were as follows: (1) Patients with DTs of the abdominal wall or abdominal cavity; (2) Patients undergoing macroscopically complete surgical resection (R0 or R1); and (3) Patients who received surgical resection as the initial treatment. According to the above criteria, the remaining 113 patients were analyzed and formed the basis of the present study. The study protocol was approved by the Ethics Committee of the National Cancer Center (No. NCC 2017-YZ-026, October 17, 2017), and all patients signed an informed consent form before the study.

Clinical data and surgical outcomes were collected based on electronic records. The tumor site was categorized as intra-abdominal or abdominal wall. Surgical margin and tumor size were examined by two pathologists specialized in gastroenteric tumors, and the microscopic margin status was considered positive if the tumor was identified in the pathological specimen to be <0.5 cm from the edge of the inkblot. According to the patient’s general condition and the radiologist’s experience, adjuvant radiation with a median overall dose of 55 Gy was recommended. The patients received a follow-up survey every 1 to 2 years via outpatient visits or telephone until recurrence, death, or December 31, 2019. Local recurrence was the main endpoint and was diagnosed by physical computed tomography scans or magnetic resonance imaging.

All data were analyzed using the Statistical Package for the Social Sciences (SPSS version 24.0, IBM Corp., Armonk, NY, USA). Quantitative data were expressed as the mean ± standard deviation, and the two groups were compared with paired Student’s t tests and Mann-Whitney U tests for independent values for normally and non-normally distributed values, respectively. Qualitative data and ordinal data are presented as the number of cases and percentages, and the groups were compared using χ² tests or Mann–Whitney U tests, as appropriate. The local RFS time was defined as the time interval between the date of pathological diagnosis and recurrence. RFS rates were analyzed by the Kaplan-Meier method and were compared between the subgroups with the log-rank test. In addition, the Cox proportional-hazards regression model was used to perform multivariate analysis to identify the independent prognostic factors. A P value of <0.05 was considered statistically significant.

All patients successfully underwent macroscopically complete surgical resection [Figs. 1A and 1B], and there were no deaths during the perioperative period. A total of 113 patients were included in this study. The median age at first diagnosis was 36 years (range 15–71 years), and the cohort was predominantly female (73.5%, n = 83).
According to the tumor sites, 113 patients were assigned to the abdominal wall group (n = 66) or the intra-abdominal cavity group (n = 47). The proportion of female patients in the abdominal wall group was significantly higher than that in the intra-abdominal group (93.9 vs. 44.7%, P < 0.001). In contrast, the proportion of patients aged 35 years or older was significantly higher in the intra-abdominal group than in the abdominal wall group (91.5 vs. 63.6%, P = 0.001). There were more patients with a previous history of cesarean section in the abdominal wall group than those in the intra-abdominal group (34.8 vs. 6.4%, P < 0.001). In addition, patients with lesions in the abdominal wall were less likely to present with clinical symptoms than patients with intra-abdominal lesions (13.6 vs. 40.4%, P = 0.001). The number of patients in the intra-abdominal group with lesions >10 cm was significantly higher than that in the abdominal wall group (27.7 vs. 7.6%, P = 0.011), and the lesions in the intra-abdominal group were mostly adhered to important nerves or vasculature (42.6 vs. 13.6%, P = 0.001). In terms of the surgical outcomes, the abdominal wall group had a significantly shorter operation time (98.7 ± 50.0 min vs. 194.5 ± 90.3 min, P < 0.001) and a lower amount of intraoperative blood loss than the intra-abdominal group (24.1 ± 41.1 ml vs. 136.0 ± 149.4 ml, P < 0.001) [Supplementary Tables 1, and 2, http://links.lww.com/CM9/A443].

The median follow-up interval was 61 months (range: 9–250 months). During the whole follow-up period, a total of 12 patients developed recurrence after surgery with or without adjuvant radiotherapy: 2 cases of recurrence were found in patients presenting with intra-abdominal DTs, and 10 cases of recurrence were found in patients presenting with abdominal wall DTs. The estimated 5- and 10-year RFS rates for the entire cohort were 92.8% and 89.8%, respectively [Figure 1C]. It is worth noting that recurrence was still observed in one patient beyond 10 years. In addition, none of the 12 patients who were admitted with recurrent disease experienced recurrence during follow-up after surgical resection combined with or without radiotherapy.

According to the univariate analysis, tumor location, tumor size, and margin status significantly affected RFS (P < 0.05). A significantly higher rate of local recurrence was associated with abdominal wall DTs, a tumor size >10 cm, and an R1 margin status [Figs. 1D–1F]. According to the multivariate analysis, RFS was significantly affected by tumor location (Hazard ratio [HR]: 8.407; 95% confidence interval [CI]:1.649–42.865; P = 0.010), tumor size (HR: 17.437; 95% CI: 3.648–83.346; P < 0.001), and margin status (HR: 8.045; 95% CI: 2.388–27.099; P = 0.001).

In the present study, we divided ADT patients into an intra-abdominal DT group and an abdominal wall DT group to compare the clinicopathological features and prognosis factors of the two groups. Consistent with previous literature, the present study revealed that compared to patients with intra-abdominal DTs, most patients with abdominal wall DTs were young women with a history of...
cesarean section. Our study also found that the tumor size of patients with intra-abdominal DTs was significantly larger than that of patients with abdominal wall DTs, and most of these patients presented with corresponding clinical symptoms upon the first diagnosis. This may be due to the insidious nature of intra-abdominal DTs and the absence of obvious special clinical symptoms at the initial stage. As the tumor gradually increases and compresses the surrounding organs, it causes abdominal pain, ileus, hydronephrosis, and other clinical symptoms.

In terms of the prognostic factors targeted ADTs, our results showed that intra-abdominal DTs, large tumor size, and R0 resection were all independent predictors for RFS in DT patients. Previous studies have demonstrated that the long-term prognosis of patients with abdominal wall DTs is significantly better than that of patients with intra-abdominal DTs. Wilkinson et al. reported the prognosis of 50 patients with abdominal wall DTs who underwent surgical resection. Within a median follow-up period of 5 years, the local recurrence rate was only 8% (4/50). Our study found that only 3% (2/66) of patients with abdominal wall DTs had local recurrence during follow-up. However, the local recurrence rate of patients with intra-abdominal DTs was 23.1% (10/47), and the tumor size was >5 cm in all 10 patients with recurrence, of whom 4 patients had tumors larger than 10 cm. In addition, of the 10 patients with recurrence in the intra-abdominal DT group, 5 had positive margins after surgery. We believe that unlike abdominal wall DTs located on the body surface, due to the rarity of DTs and the absence of special clinical symptoms in the initial stage, lesions in the abdominal cavity are already large at the time of diagnosis and are closely related to the surrounding important nerves or vasculature. To preserve organ function as much as possible, it is difficult to achieve radical resection, which results in a significantly higher local recurrence rate.

In conclusion, compared with intra-abdominal DTs, abdominal wall DTs demonstrate different clinicopathological features and better prognosis. Moreover, R0 resection and tumor size <5 cm suggest a better prognosis after surgical resection in patients with abdominal DTs.

Under the premise of ensuring negative margins during the first surgical procedure, patients with abdominal wall DTs can obtain satisfactory prognoses through radical resection.

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**Conflicts of interest**

None.

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