We aimed to investigate the long-term effects of microsurgical varicocelectomy on pain improvement and sperm parameters in patients with varicocele-related pain. A total of 72 patients who had undergone microsurgical subinguinal varicocelectomy because of varicocele with scrotal pain between 2004 and 2009 were included in the study. The patients were grouped according to the presence or absence of pain following surgical treatment. The patients expressing a decrease in frequency and severity of pain or minimal fullness sense were included in the pain-positive group. The mean follow-up period was 54.4±18.06 months. There was left-sided varicocele in 80.3% of patients, while 19.7% had bilateral varicocele. In our study, complete success rate (Visual Analog Scale: 0-1) was found to be 79.2% (57/72), while failure (complete and partial failure) rate was 20.8% (15/72), and a significant difference was found (P<0.05). Microsurgical subinguinal varicocelectomy is a reliable approach for clinically varicocele patients with scrotal pain complaints. Regardless of the type of pain, varicocelectomy significantly decreases pain. The success of the treatment is not related to the degree of varicocele.