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Kashyap Rajeevsarathy* (kashyap@math.ou.edu), Department of Mathematics, 601 Elm Ave, PHSC 423, Norman, OK 73019. *Fractional powers of Dehn twists.*

Let t_C be a Dehn twist about a nonseparating curve C in a surface G of genus $g+1$. A *fractional power* of t_C of *exponent* $\ell//n$ is a homeomorphism h such that h^n is isotopic to t_C^ℓ, that is, $[h]^n = [t_C]^\ell$ in the mapping class group of G. In particular, a root of t_C of degree n is just a fractional power of exponent $1//n$. A fractional power is *side-exchanging* (SE) if it interchanges the two sides of C, and *side-preserving* (SP) otherwise. As the main result, we state necessary and sufficient conditions for the existence of an SE or SP fractional power of t_C of degree $\ell//n$. We will also state some applications of the main result in both cases. (Received September 16, 2010)