For a ship hull with large deck openings such as container vessels and some large bulk carriers, the analysis of warping stresses and hatch opening deformations is an essential part of ship structural analyses. It is thus of importance to better understand the ultimate torsional strength characteristics of ships with large hatch openings. The primary aim of the present study is to investigate the ultimate strength characteristics of ship hulls with large hatch openings under torsion. Axial (warping) as well as shear stresses are normally developed for thin-walled beams with open cross sections subjected to torsion. A procedure for calculating these stresses is briefly described. As an illustrative example, the distribution and magnitude of warping and shear stresses for a typical container vessel hull cross section under unit torsion is calculated by the procedure. By theoretical and numerical analyses, it is shown that the influence of torsion induced warping stresses on the ultimate hull girder bending strength is small for ductile hull materials while torsion induced shear stresses will of course reduce the ship hull ultimate bending moment.