$$\frac{\sin\beta\sin\gamma}{\sin\beta\sin\gamma} \qquad \frac{\sin\beta\sin\gamma}{\cos(\beta-\gamma)+\cos\alpha} \qquad \frac{bc}{2\Delta},$$

$$\cot\gamma+\cot\alpha=\frac{\sin(\gamma+\alpha)}{\sin\gamma\sin\alpha}=\frac{\sin\beta}{\sin\gamma\sin\alpha}=\frac{2\sin\beta}{\cos(\gamma-\alpha)+\cos\beta}=\frac{2bR}{ca}=\frac{b^2}{2\Delta},$$

$$\cot\alpha+\cot\beta=\frac{\sin(\alpha+\beta)}{\sin\alpha\sin\beta}=\frac{\sin\gamma}{\sin\alpha\sin\beta}=\frac{2\sin\gamma}{\cos(\alpha-\beta)+\cos\gamma}=\frac{2cR}{ab}=\frac{c^2}{2\Delta},$$

$$\cot\alpha+\cot\beta+\cot\gamma=\frac{a^2+b^2+c^2}{4\Delta}=\frac{s^2-4Rr-r^2}{2rs},$$

$$\cot^2\alpha+\cot^2\beta+\cot^2\gamma=\frac{(s^2-4Rr-r^2)^2}{4r^2s^2}-2,$$

$$\cot\beta\cot\gamma+\cot\gamma\cot\alpha+\cot\alpha\cot\beta=1,$$

$$\cot\alpha\cot\beta\cot\gamma=\frac{s^2-(2R+r)^2}{2rs},$$

$$(\cot\alpha+\cot\beta)(\cot\beta+\cot\gamma)(\cot\gamma+\cot\alpha)=\frac{2R^2}{rs},$$

$$\cot^3\alpha+\cot^3\beta+\cot^3\gamma=\frac{(s^2-4Rr-r^2)^3-48R^2r^2s^2}{8r^3s^3},$$