This paper deals with the detection of shot changes in order to improve H.264 compression efficiency. This improvement is achieved by inserting intra frames when cuts occur and coding the rest of the frames using inter-frame prediction. In previous works, the proposed algorithm has demonstrated to be a fast and robust method for low delay and very low bitrate video coding, based on the comparison of the number of intra-coded macroblocks with two thresholds, one fixed and the other adaptive. In this paper, the optimization of the algorithm to be applied to high quality and low delay video coding is discussed and the results with Enhanced Definition Television format sequences (EDTV) are presented. This algorithm is also compared with another recent method based on the same measure, with results favouring our approach.