

## (Assisted Hatching, AH)

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### The Effects of Assisted Hatching (AH) According to The Indications

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#### =Abstract=

Implantation rates remain low following human in vitro fertilization (IVF). Suboptimal culture conditions may limit the ability of embryos to hatch as blastocysts, and artificial opening of the zona pellucida has been proposed as a means to promote subsequent hatching (assisted hatching).

In this study, assisted hatching (AH) by zona drilling using acidic Tyrode's solution was performed in 320 patients, due to their age of more than 38 years (group A), the thick zona pellucida (group Z; ZP 18  $\mu$ m), and failures in implantation more than 3 times in previous IVF-ET trial (group P). This study was designed firstly, to study the effects of AH on the outcomes of IVF-ET according to the indications and secondly, to verify the appropriate application of AH. The results were as follows;

1. There was no difference in pregnancy rate between AH group (26.6%) and non-AH group (26.5%).

2. Assisted hatching (AH) showed significantly higher pregnancy rate of the patients with thick zona pellucida than those of the patients with age factor and with the history of repeated implantation failure. But in the patients with age factor only, AH resulted in higher pregnancy rate.

3. Interestingly, the patients with complex factors including zona factor (Z: 33.9%; ZA: 30.4%; ZP: 31.6%; ZAP: 21.4%) showed higher pregnancy rates than other complex factors excluding zona factor (A: 24.4%, P: 0%; AP: 10.8%).

From these results, AH is more helpful to the patients with thick zona pellucida rather than patients with older age and/or previous repeated implantation failure.



(IVF- ET)

(micro- fertilization)

(co- culture)

10- 15%

(hatching)

가

가

가

(Perona & Wassarman, 1986; Swada et al., 1990),

(Gonzales & Bavister, 1995).

가

(zona hardening)가

가

(assited hatching: AH)

(partial zona dissection:PZD, Malter & Cohen, 1989a; zona drilling: ZD, Gordon & Talansky, 1986; Laser-ZD, Strohmer & Feichtinger, 1992).

가

가

(Liu et al., 1993; Stein et al., 1995; Hellebaut et al., 1996; Bider et al., 1997;

Lanzendorf et al., 1998).

1.

1996 1 1997 10 976  
 320  
 가 38 (A:45 ), 가 18  $\mu$ m (Z:115 ),  
 (3 ) (P:10 ) 가  
 가 (AZ:23 , AP:37 , ZP:76 , AZP:14 )

2.

1)

GnRH- agonist FSH/HMG  
 가 18mm 10,000IU hCG 34  
 3-5  
 16-20 48  
 HTF 10%  
 (synthetic serum substitute: SSS, Irvine, USA)

10 hCG

2)

holding  
 pipette( :150  $\mu$ m, :30  $\mu$ m) AH  
 micropipette( :10  $\mu$ m) . AH micropipette micro-puller(750B, Kopf, USA)  
 , pipette microforge (Akatel, France)

3)

(60mm, Fakon) (10% SSS-HTF) pH가 2.5 Acid Tyrode  
 20  $\mu$ l, 40  $\mu$ l oil  
 3

4)

(micro-manipulator, NT-88, Narishige, Japan)  
 micro-injector mouth-controlled aspirator  
 AH micro-pipette acid Tyrode  
 가 holding pipette  
 AH micro-pipette 가 acid  
 Tyrode 25  $\mu$ m acid  
 Tyrode

2-3

3.

X<sup>2</sup>-test

, p 0.05



가 (26.6%)  
 가 (Table 1).  
 가 (26.5%) (38 )  
 가 (31.3%) (P=0.06, 21.0%)  
 Table 2), 가  
 (24.4%) (15.8%)  
 (18 μ m ) 32.2%  
 (16.1%)  
 (P<0.01, Table 3).  
 가 (3 )  
 13.9% (30.6%)  
 (P<0.01, Table 4) (26.2%)  
 1 가

가  
(, 1997)

가  
가,

(Gordon & Dapunt, 1993; Schiewe et al., 1995).

가  
trypsin-like proteinase (trypsin)가

(Swada et al., 1990).

FSH

가 가 ,

(Cohen et al., 1992; Schoolcraft et al., 1995;

Bider et al., 1997).

가

PZD (Cohen et al.,

1990) thinning (Khalifa et al., 1992)

acid Tyrode

ZD

가

(Malter & Cohen, 1989b),

(Cohen et al., 1992; Liu et al., 1993; Schoolcraft et al., 1994).

가 (Schoolcraft et al., 1995),

(Stein et al., 1995),

가

가

Cohen (1992) FSH

가 가 15  $\mu$  m

가

(Bider et al., 1997; Lanzendorf et al., 1998)

가

가

3

가

Stein (1995)

3

가 38

가

가

가

가

가

가

320

1.

26.6%

26.5%

2.

가

32.2%

가

가

3.

가

(Z: 33.9%; ZA: 30.4%; ZP: 31.6%; ZAP: 21.4%)

가

(A: 24.4%, P: 0%; AP: 10.8%)

가

가



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