

,

. . . .

I. , 15-18) .

,

가 , 가 . 가  
1), 가 ,

2).  
1960 가 , ,  
3) 가 90%

가  
, 9),  
4-14) . 20) ,

. . . .

, , . 가

가 , 가 , 1 6

가 (S ) 22 ,  
 가 (NS ) 32

Table 1 28  
 75 , 가 42 , 가 12

II.

1. 2.

3가

1. [NS ]: 6  
 3

2. [S ]:  
 6 가 3

3.

가

Table 1. The demographic distribution of the participating patients in each group

age, sex	NS group	S group
21 - 30	2	2
31 - 40	4	3
41 - 50	17	10
51 - 60	7	7
>60	2	0
Male	5	7
Female	27	15
sum	32	22

NS group : non surgical treatment group

S group : surgical treatment group

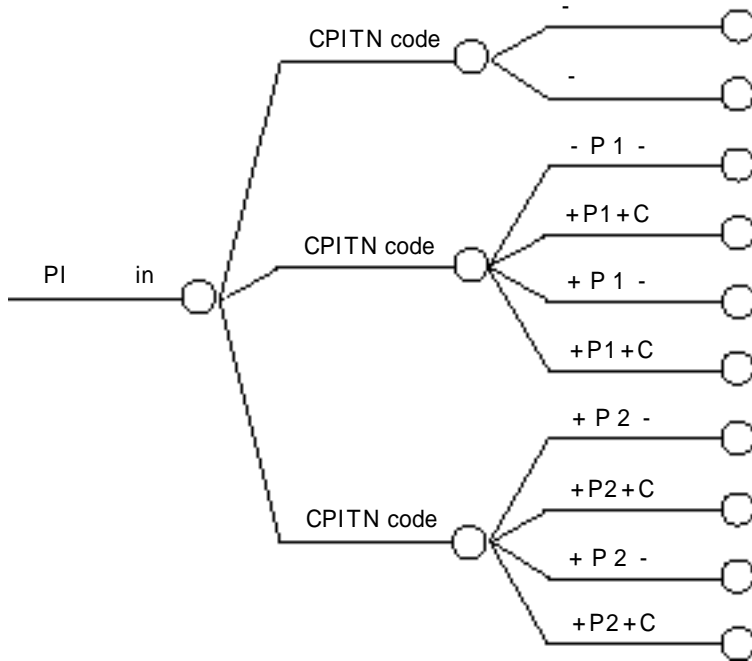


Fig 1. A decision tree of treatment of adult chronic periodontitis based on CPITN

가 WHO  
(CPITN: Community  
Periodontal Index Treatment Need)

21),  
Fig. 1

(PI  
Periodontal Index, CPITN Community  
Periodontal Index Treatment Need, P  
, P1 4mm , P2  
4mm , C , B  
).  
가 3mm

가  
가  
22,23),  
가  
가 3mm

(1)

가 • 0: 가  
가 • 1( 100): 2

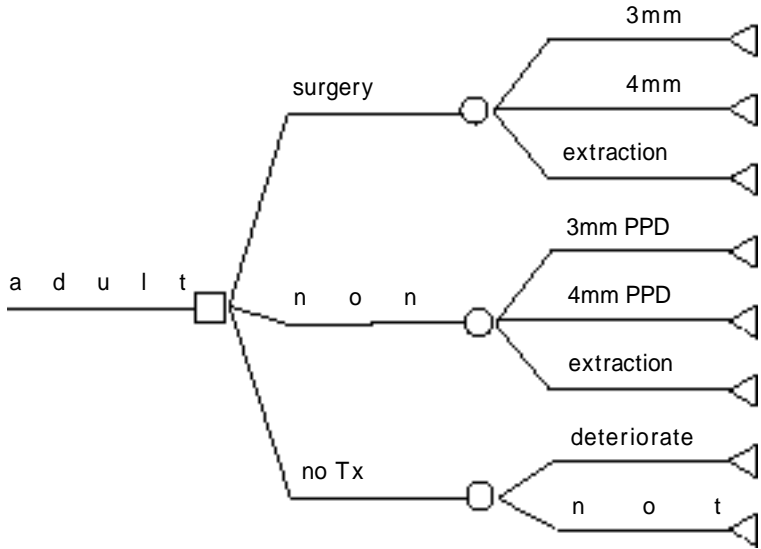


Fig 2. A decision tree for the treatment of adult chronic periodontitis

(PPD 3mm, BOP가 )가 . 가 3

• 0 1

(3)

가 , 가 3mm

가 3mm /

(2)

(NS)

(S)

1 6

t - test

4

가

가 10mm

가 4mm 9mm ,

10%

(decision node: )

가

3

(terminal node)

2

가

가

가

가

가

24), 6 18

가 NS

가 3 mm - 100  
가 4mm - 80

- 0 4

S 가

가 3mm - 100  
가 4mm - 75

- 0 - 60, - 100, - 50, - 75,

(NS) (S) (NS) (S)

가 가 가 가

가 가

NS S Wilcoxon

(NS) (S) rank sum test

가

가

5% Fig. 가 roll

2 back . roll back

가 가 가

가 가

(Probability)

Table 2. The distribution of the values of subjective satisfaction level for each parameter

	NS group	S group
Subjective parameters	[Mean]	[Mean]
Oral hygienic easiness	70.3*	62.5
Hypersensitivity	67.9	61.9
Post treatment comfort	66.2*	61.7
Complication	80.3*	73.6
Functional comfort	55.2*	60.5
Willingness to repeat therapy	74.4*	67.7

\* : significant difference between NS and S group(p<0.05)

Table 3. The distribution of probability(P), utility(U) and expected utility(EU) in each branch of decision tree based on clinical achievement of treatment goal.

	P	NS group		P	S group	
		U	EU		U	EU
PD < 3mm	0.83	100	83	0.82	100	82
PD > 4mm	0.17	80	13.6	0.17	75	12.8
Extraction	0	0	0	0.01	0	0
total EU			96.6			94.8

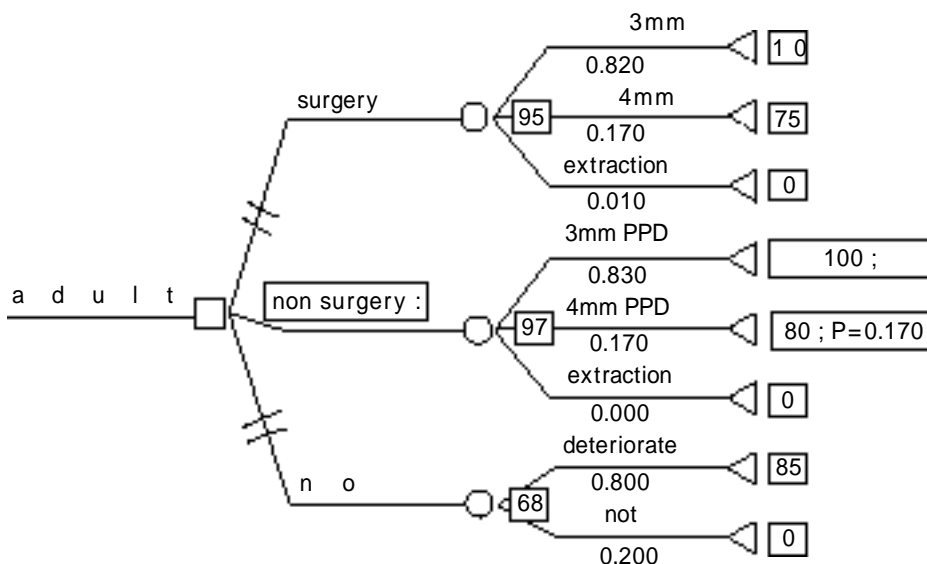


Fig 3. Clinical Decision tree based on clinical evaluation and the expected utility value rolled back by using success rates as the probability and utility value.

X Utility) . NS 0.83±0.12, S  
 0.82±0.14 .  
 III. .  
 가 4mm 가  
 1. 가 0.17 ,  
 NS 0.00, S  
 1 6 0.01 .  
 1 6  
 가 3mm 2.

Table 4. The distribution of probability(P), utility(U) and expected utility(EU) in each branch of decision tree based on patient's satisfaction level

	NS group			S group		
	P	U	EU	P	U	EU
very satisfied	0.12	100	12	0.02	100	2
satisfied	0.48	75	36	0.31	75	23.3
unsatisfied	0.28	60	16.8	0.63	60	37.8
very unsatisfied	0.12	50	6	0.04	50	2
Total EU			70.8			65.1

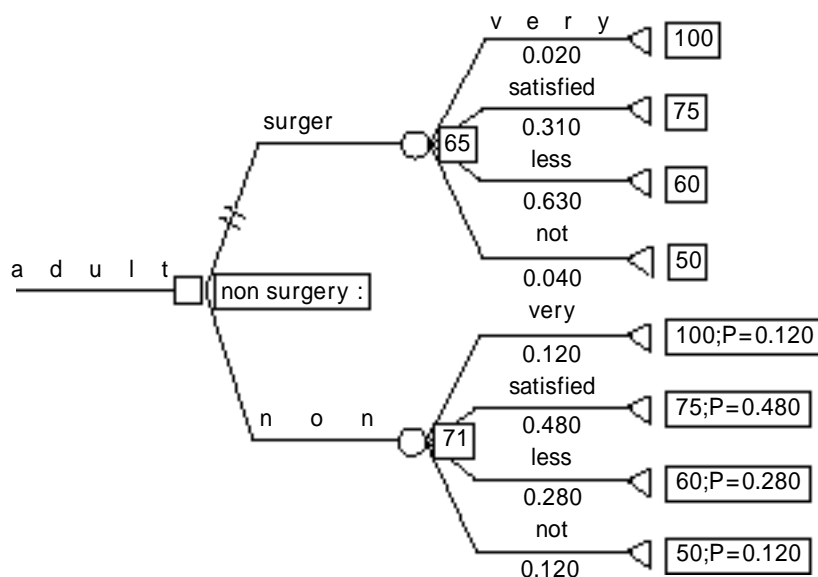


Fig 4. Clinical Decision tree based on subjective evaluation and the expected utility value rolled back by using distribution value based on indices of patient's satisfaction level as the probability and utility value imposed subjectively with socioeconomic consideration

가 (p<0.05).  
 S  
 가  
 가  
 Table 2 , NS 54%  
 S  
 NS (p<0.05).  
 가

Table 5. Distribution of response expressed by patients to each question about each complication.

	NS group	S group
Oral hygiene easiness		
extremely difficult	0	0
somewhat difficult	9	20
moderately easy	17	2
very easy	0	0
Hypersensitivity		
extremely sensitive	5	2
somewhat sensitive	9	17
mild sensitive	10	3
no sensitive	2	0
Post - Tx comfort		
extremely abnormal	20	0
somewhat abnormal	14	20
generally normal	10	2
absolutely normal	0	0
Complication		
regular	0	0
occasional	0	2
infrequent	19	20
never	7	0
Functional comfort		
extremely uncomfortable	17	2
somewhat uncomfortable	6	18
generally comfortable	3	2
absolutely comfortable	0	0
Willingness to repeat therapy		
absolutely not	0	0
would not prefer	4	8
generally agree	19	14
absolutely prefer	3	0

. NS  
 가 , (p<0.05).  
 , S  
 .  
 3.  
 (p<0.05). 가  
 S  
 (p<0.05). 60 - NS 가 3mm  
 70% , S 0.83( 0.62 - 0.98)  
 0.82( 0.44 - 0.98) .



가 가 roll back , 가 3mm

Table 3, Fig. 3 가 28). 80%가

Table 4, 5 가 (NS) 1980 Knowles , Modified Widman Flap surgery, pocket elimination surgery 3 8 4 - 6mm 3가 8 29,30). 1982 Lindhe 6

Table 4, Fig. 4

IV. Becker 5) Renvert 13), Kaldahl 7), meta - anlysis

가 30 meta - anlysis

가 6, 25 - 27). Antczak - Bouchom

1 6 meta - analysis MEDLINE 400

가 가 가

가

가 , 20),  
31). 1 6 . 1992  
가 , Kalkwarf 3  
-  
가가 가 20),  
가 가  
32, 33). 2 1 , 3 3  
가  
가 , 가  
가 가  
가 가  
가 가 S  
34). . 1989 Kalkwarf  
가가 4 , 1 가  
가 35). 2  
가 가 ,  
가 가  
가 가  
60 - 70%  
가 , 가  
20),  
가 , 36).

37),

가

가 3mm

1 6

가

3

가

(decision tree)

25,

38).

1.

1 6

가

1 6

가

가 3mm

$0.83 \pm 0.12,$

$0.82 \pm 0.14$

2.

V.

가

( $p < 0.05$ ).

3.

가

가

30

(optimal path)

가가

가

가

가

VI.

가 . 54

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- Abstract -

## Decision Making on the Non surgical, Surgical Treatment on Chronic Adult Periodontitis

Si Eun Song, Seung Won Li, Kyoo Sung Cho, Jung Kiu Chai, Chong Kwan Kim  
Department of Periodontolog, College of Dentistry, Yonsei University

The purpose of this study was to make and ascertain a decision making process on the base of patient - oriented utilitarianism in the treatment of patients of chronic adult periodontitis.

Fifty subjects were chosen in Yonsei Dental hospital and the other fifty were chosen in Severance dental hospital according to the selection criteria. Fifty four patients agreed in this study. NS group(N=32) was treated with scaling and root planing without any surgical intervention, the other S group(N=22) done with flap operation. During the active treatment and healing time, all patients of both groups were educated about the importance of oral hygiene and controlled every visit to the hospital. When periodontal treatment needed according to the diagnostic results, some patients were subjected to professional tooth cleaning and scaling once every 3 months according to an individually designed oral hygienic protocol. Probing depth was recorded on baseline and 18 months after treatments.

A questionnaire composed of 6 kinds(hygienic easiness, hypersensitivity, post treatment comfort, complication, functional comfort, compliance) of questions was delivered to each patient to obtain the

subjective evaluation regarding the results of therapy.

The decision tree for the treatment of adult periodontal disease was made on the result of 2 kinds of periodontal treatment and patient's subjective evaluation. The optimal path was calculated by using the success rate of the results as the probability and utility according to relative value and the economic value in the insurance system.

The success rate to achieve the diagnostic goal of periodontal treatment as the remaining pocket depth less than 3mm and without BOP was  $0.83 \pm 0.12$  by non surgical treatment and  $0.82 \pm 0.14$  by surgical treatment without any statistically significant difference. The moderate success rate of more than 4mm probing pocket depth were 0.17 together. The utilities of non - surgical treatment results were 100 for a result with less than 3mm probing pocket depth, 80 for the other results with more than 4mm probing pocket depth, 0 for the extraction. Those of surgical treatment results were the same except 75 for the results with more than 4mm.

The pooling results of subjective evaluation by using a questionnaire were 60% for satisfaction level and 40 % for no satisfaction level in the patient group receiving non - surgical treatment and 33% and 67% in the other group receiving surgical treatment. The utilities for 4 satisfaction levels were 100, 75, 60, 50 on the base of that the patient would express the satisfaction level with normal distribution.

The optimal path of periodontal treatment was rolled back by timing the utility on terminal node and the success rate, the distributed ratio of patient's satisfaction level. Both results of the calculation was non surgical treatment.

Therefore, it can be said that non - surgical treatment may be the optimal path for this decision tree of treatment protocol if the goal of the periodontal treatment is to achieve the remaining probing pocket depth of less than 3mm for adult chronic periodontitis and if the utilitarian philosophy to maximise the expected utility for the patients is advocated.

Key words : plaque control, root planing, flap operation, decision tree, probing pocket depth