

# **Early to Mid-Term Clinical Experiences of Total Duracon<sup>®</sup> Knee Arthroplasties in Finland and in Kuopio University Hospital from 1992 to 1999**

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# Early to Mid-Term Clinical Experiences of Total Duracon<sup>®</sup> Knee Arthroplasties in Finland and in Kuopio University Hospital from 1992 to 1999

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## Abstract

*The objective of this study was to document early experiences with Duracon<sup>®</sup> total knee prostheses in Kuopio University Hospital (KUH) from 1992 to the end of 1999 and to compare the hospital's 7-year clinical data to the national results provided from The Finnish Arthroplasty Register (FAR) from 1980 to 1999.*

*Specific data is provided in regard to Duracon<sup>®</sup> knee frequency of use, market share, and patient gender and age. Kaplan-Meier-Survival curves and Primary complication data on the Duracon<sup>®</sup> prosthesis were also provided for comparison and supporting documentation. The results from the FAR were comparable to the data recorded at KUH.*

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## Introduction

Kuopio University Hospital, Finland (KUH), serves over 255,000 people in Eastern Finland within its three orthopaedic departments; Kuopio University Hospital, Iisalmi Regional Hospital and Varkaus Regional Hospital.

The first knee arthroplasty was conducted in Finland in 1973. The first Duracon<sup>®</sup> primary total knee arthroplasty (TKA) was conducted in 1992 and has since become the most commonly used prosthesis system in Finland. The purpose of this paper is to document the mid-term experiences of the Duracon<sup>®</sup> total knee arthroplasty (TKA) prostheses in Kuopio University Hospital (KUH) and compare the resultant data to the information registered with *The Finnish Arthroplasty Register* (FAR).

## Method

*The Finnish Arthroplasty Register* (FAR)<sup>1</sup> is organized by the National Agency for Medicines in Finland and is responsible for the registration and data of all arthroplasties in Finnish hospitals since 1980.

The Duracon<sup>®</sup> total knee prosthesis was chosen for the comparison, because it was the most widely used knee prosthesis in Finland and at KUH, correspondingly. The results provided in this paper are based on the latest registered information from the FAR from 1980 to 1999 compared to the latest information on the database at KUH from 1992 to 1999.

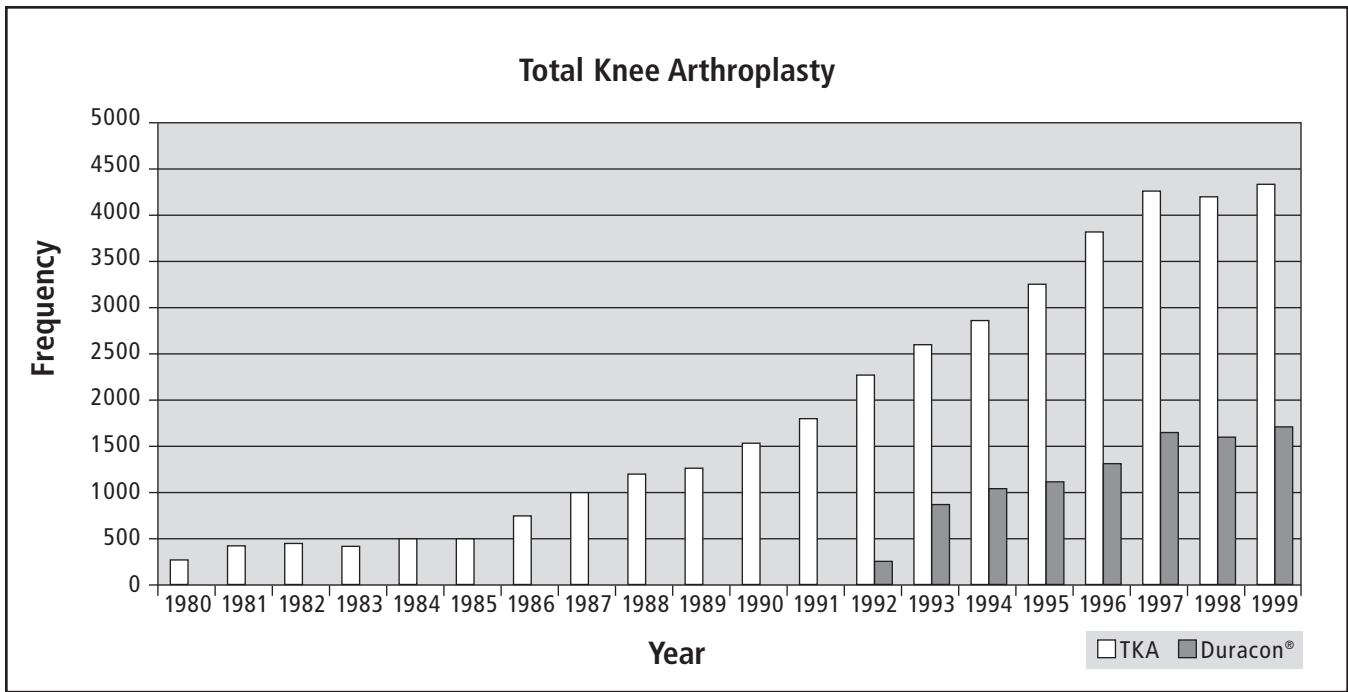


Figure 1. Annual Frequency of Primary Total Knee Arthroplasty surgeries. (Source: Finnish Arthroplasty Register)

## Results

According to FAR data, the total number of knee arthroplasties performed in Finland from 1980 to 1999 was 37,939. Duracon® total knee arthroplasty figures recorded from inception in 1992 through 1999 are 9,910 or 26.1% of the cumulative total (1980-1999). However, in the time period since introduction, (1992-1999) the total number of Duracon® knee surgeries represented 35.8% of the total surgeries performed in Finland.

The (1992-1999) annual number of Duracon® knee and other TKA surgeries for Finland is illustrated in Figure 1.

KUH began implanting Duracon® Primary knee arthroplasties in 1992 and to date, the hospital has implanted a total of 1008 over the 7-year period (1992-1999).

Figure 2 illustrates the overall market share of the ten most widely utilized knee prosthesis models in Finland (1980-1999).

Figure 3 provides a comparison of the Indications for the Duracon® TKA - Finland (9,910 surgeries) and KUH (1008 surgeries).

The age distribution of Duracon® TKA patients in Finland and KUH are presented in Figure 4.

The Kaplan-Meier Survival curves of Duracon® TKA in Finland and in KUH from 1992 to 1999 are presented in Figures 7 and in Figure 8.<sup>1</sup> The corresponding survival rates between female and male patients in Finland are presented in Figure 9.

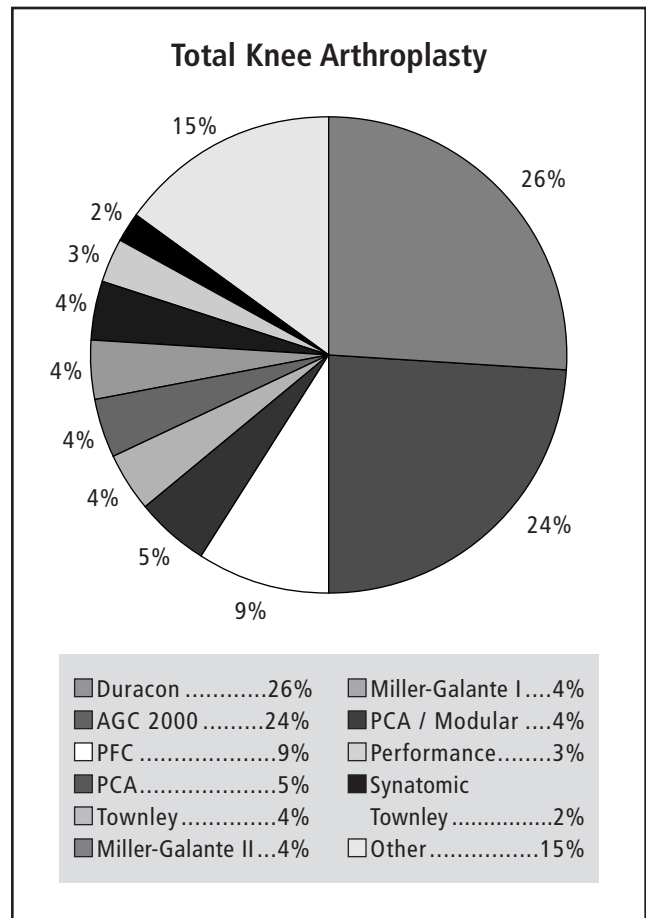


Figure 2. Market share for the 10 most widely used knee prostheses for all recorded surgeries in Finland (1980-1999). (Source: Finland Arthroplasty Register)

INDICATION	PRIMARY - TKA	
	Finland	KUH
Primary Osteoarthritis	83.6	88.7
Secondary Osteoarthritis	2.4	2.3
Rheumatoid Arthritis	10.8	3.8
Other Illness	3.2	5.2
Female	76.3	77.0
Male	23.7	23.0
Right Knee	54	53.9
Left Knee	46	46.1
FEMUR		
Cemented	77.8	83.0
Non-cemented	22.2	17.0
TIBIA		
Cemented	85.3	92.0
Non-cemented	14.7	8.0
PATELLA		
Component	44.0	62.0
No Patella Component	56.0	38.0
Cemented	96.7	97.7
Non-cemented	3.3	0.3

Figure 3. Duracon® Primary TKA Indication comparison.

Patient Age	Finland	KUH
Years	TKA	TKA
0 – 29	7	0
30 – 39	44	2
40 – 49	150	3
50 – 59	832	75
60 – 69	3319	342
70 – 79	4654	491
80 +	904	95

Figure 4. Duracon® Primary TKA Surgeries performed relative to Patient age.

## Complications

The total registered complication rate for all Duracon® TKA surgeries was 2.5 % in Finland over the 7 year period from 1992 to 1999 is illustrated in *Figure 5*. The corresponding list of complications (4.6 %) in KUH is presented in *Figure 6*.

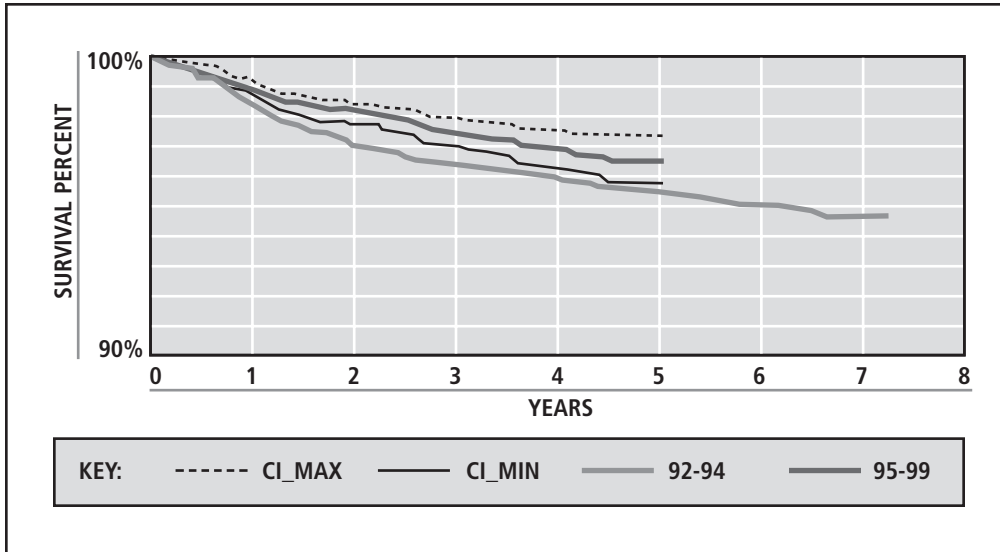
Complication	Frequency	Percent (n = 9,910)
Anesthesia compl.	1	0.0001
Infection	38	0.38
Postoper. Haematoma, Evacuation needed	17	0.17
DVT	45	0.45
Malposition	16	0.16
Luxation	17	0.17
Nerve complications	8	0.08
Other complications	78	0.79
Exitus	4	0.04
Necrosis in wound	21	0.21
<b>Total</b>	<b>245</b>	<b>2.5</b>

Figure 5. Primary registered complications of Duracon® TKA in Finland in 1992-1999.

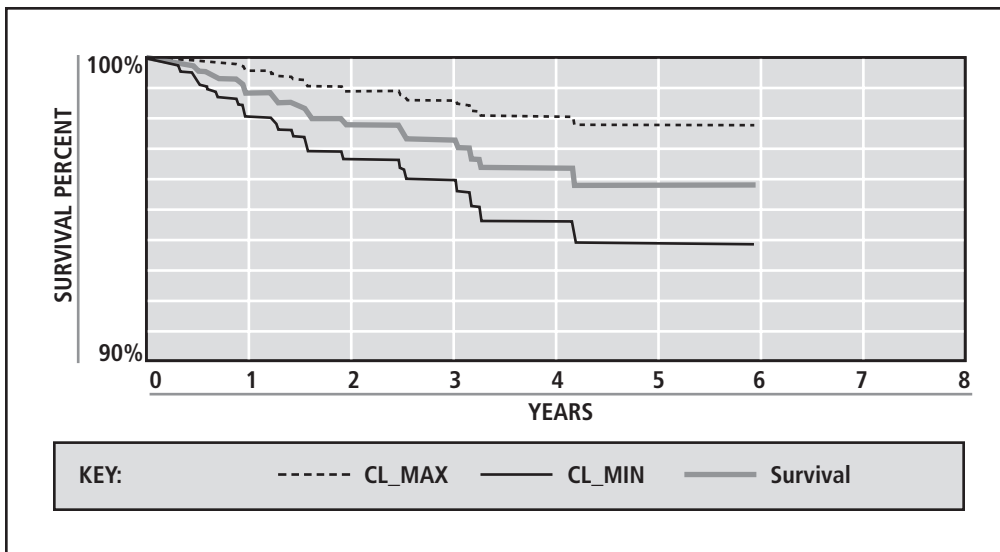
Complication	Frequency	Percent (n = 1,008)
Infection	9	0.89
DVT	12	1.2
Malposition	6	0.59
Nerve complication	5	0.49
Necrosis in wound	5	0.49
Aseptic loosening of Tibial component	3	0.30
Tibial plastic change	2	0.2
Tibial plateau fracture Preoperatively	2	0.2
<b>Total</b>	<b>44</b>	<b>4.4</b>

Figure 6. Primary registered complications of Duracon® TKA in KUH in 1992-1999.

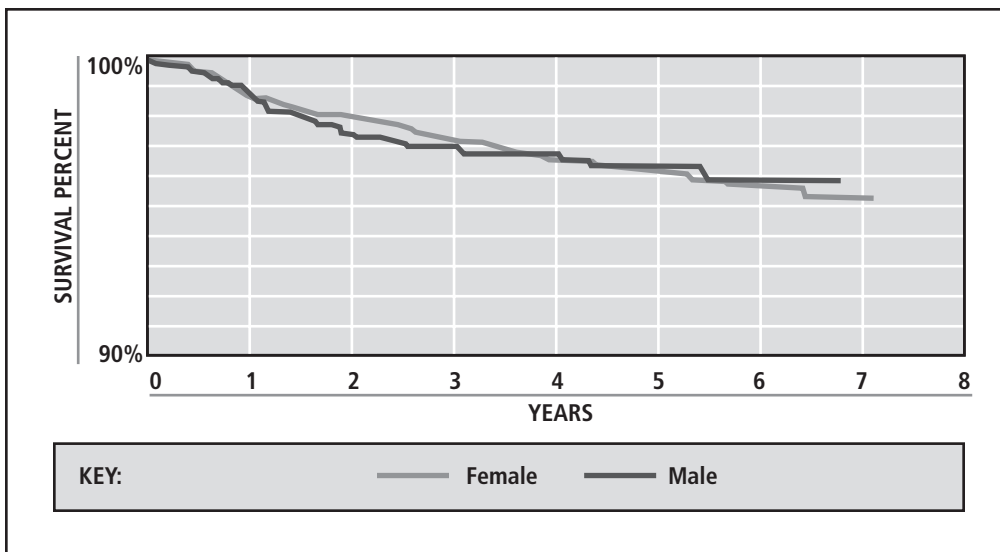
## Kaplan-Meier Survival Curves Duracon® Primary TKA Surgeries 1992-1999



**Figure 7.** The Survival curve of Duracon® TKA, all hospitals in Finland in 1992-1999.



**Figure 8.** The Survival curve of Duracon® TKA in KUH 1992-1999.



**Figure 9.** The Survival curves of Duracon® Total Knee arthroplasties of Female and Male patients in Finland 1992-1999.

## Discussion

This paper is based strictly on data provided from the Finnish Arthroplasty Register (FAR) and from Kuopio University Hospital (KUH) and is purely statistical in nature. The intent was to summarize the mid-term (7 years) experiences of the Duracon® primary total knee arthroplasty (TKA) prosthesis performed by 20 resident and senior orthopaedic surgeons at Kuopio University Hospital, and compare this data to the information registered with the FAR.

In general, this type of national database is large enough to provide useful information for international examination, similar to the Swedish and Norwegian National Hip and Knee Arthroplasty Registers.<sup>2,3,4</sup>

At KUH, in general, we determined that our own complication rate was higher than published in the FAR. However, our own complication rate was acceptable when compared to other clinically published data.<sup>1,3</sup>

The mid-term experiences of the Duracon® total knee prosthesis are good. The results are more favorable than the other knee prosthesis used in KUH. Stryker® Howmedica Osteonics has provided organized educational instruction for the use of instrumentation to the surgeons and nurses. It has been KUH practice to make this instructional experience mandatory.

One notable observation in our experience with the Duracon® knee prosthesis was that there have been very few patella problems, and implant related complications are less than 0.50%, although this has been considered a potentially common and often harmful problem according to industry published literature.<sup>4,5</sup>

In conclusion, this comparison between the KUH experience to the Finnish Arthroplasty Register provides valuable information to the readers as it provides a benchmark for a knee system's performance. The recurring problem is the accuracy of the data in the database. It is as perfect and dated as the interest of the individual orthopaedic surgeon and hospital in Finland that provide the records.

Finally, to promote education and awareness of common and special problems associated with knee arthroplasty surgeries, it is recommended that orthopaedic surgeons and hospitals provide data on their primary and revision arthroplasty surgeries with all possible complications to national databases such as the registers in Finland, Sweden, and Norway.<sup>1,2,3,4</sup> The long-term goal is to provide information that will improve results and recovery outcomes for our patients.

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